

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM
AUTUMN BREAK HOLIDAY HOMEWORK (SESSION 2026–27)
PRIMARY CLASSES (BV-III, I TO V)

CLASS BV-III

SUBJECT	HOMEWORK
ENGLISH	Handwriting (alphabets and words) 10 pages.
HINDI	लेखन(अक्षर और दोअक्षर वाले शब्द) दस पन्ने
MATHS	Number names (1 – 20) Match the numbers. read 2 to 5 tables daily.
TWAU	Make mask of any animal.

CLASS I

SUBJECT	HOMEWORK
ENGLISH	1.PRACTICE HANDWRITING – COPYBOOK 5 PAGES 2. PREPARE A HEALTHY LIFESTYLE POSTER 3. WRITE A LETTER TO YOUR FRIEND DESCRIBING HOW YOU ARE SPENDING YOUR AUTUMN BREAK HOLIDAYS 4. MAKE A MINI DICTIONARY 5 NAMING WORDS, 5 ACTION WORDS, 5 DESCRIBING WORDS AND 5 WORDS RELATED TO HEALTHY WRITE THE MEANING OF EACH WORD AND USE IT IN A SENTENCE 5. READ ANY ONE ENGLISH STORY AND DRAW YOUR FAVOURITE CHARACTER AND WRITE 5 SENTENCES ABOUT IT
HINDI	*5 पालतू और 5 जंगली जानवरों के नाम लिखें एवं उनके चित्र चिपकाएं। * Clay modeling - 5 फलों और 5 सब्जियों को A4 sheet पर क्ले से बनाएं और नाम लिखें जो गोल हैं। *क और ख अक्षर से बारहखड़ी लिखें एवं रोजाना पढ़ें। * इ और ई की मात्रा में अंतर पहचान के लिए 10-10 शब्द अपनी पाठ्यपुस्तक से लिखें और अभिभावक की मदद से पढ़ने का अभ्यास करें। *आपको घर के बाहर (Outdoor) खेलने के लिए कौन-सा खेल सबसे अच्छा लगता है? उसका नाम लिखिए और उसका एक सुंदर चित्र बनाइए। *पाठ-10 'झूलम-झूली' कविता को हाव-भाव के साथ गाकर पढ़ें और याद करें।
MATHS	1. Rangoli patterns (patterns and shapes) On a paper make a rangoli using only shapes- circle, triangle,square . Use colours,dal,flowers, rice. 2.My body maths My bed=___handspan My Room=___footstpes My waterbottle=___fingers Make a small table and fill it. 3)My calendar Make a simple October calendar : colour Sundays with red Count: How many Sundays?How many Mondays? Mark your birthday/Dussehra 4.Revise tables Complete the Homework neatly in A4 sheet
Gardening	1.Draw a compost bin with fruit peels,leaves and earthworms. 2.Start a small compost pile with fruit and vegetable peels and dried leaves. 3.Draw and colour garden insects - Butterflies, bees ,ants etc 4.Draw/collect pictures and write names of 5 seasonal fruits and vegetables. 5.Sow any kind of seeds and observe/record the sapling / plant growth.

CLASS II

SUBJECT	HOMEWORK
ENGLISH	1. Write 10 pages of handwriting. 2. My Home, My sentences Look around your Home and write 5 sentences about the things you see. 3. Write Five lines on how did you celebrate Dussehra festival . 4. Make a small picture dictionary by using alphabets A-Z
HINDI	बच्चों, छुट्टियों का आनंद लें और प्रतिदिन थोड़ा-थोड़ा हिंदी का अभ्यास करें। अपना कार्य सुंदर एवं साफ-सुथरी लिखावट में पूरा करें। 1. लेखन कार्य 1. प्रतिदिन हिंदी की पाँच पंक्तियाँ सुंदर लिखावट में लिखें। 2. अ से अः तक स्वर तथा क से ज्ञ तक व्यंजन लिखें। 3. कमल, कलम, किताब, बादल, सूरज, तितली, गुड़िया, खरगोश, विद्यालय और परिवार शब्द पाँच-पाँच बार लिखें। 2. शब्द ज्ञान प्रत्येक विषय पर पाँच-पाँच नाम लिखिए: • फलों के नाम • सब्जियों के नाम • फूलों के नाम • पशुओं के नाम • पक्षियों के नाम 3. व्याकरण अभ्यास 1. दो अक्षर वाले पाँच शब्द लिखिए। 2. तीन अक्षर वाले पाँच शब्द लिखिए। 3. बिना मात्रा वाले पाँच शब्द लिखिए। 4. आ, इ और ई की मात्रा वाले पाँच-पाँच शब्द लिखिए। 5. विलोम शब्द लिखिए: दिन - _____ बड़ा - _____ ऊपर - _____

	अच्छा - _____ काला - _____ 4. पढ़ने का अभ्यास • प्रतिदिन 10 मिनट हिंदी की पाठ्यपुस्तक पढ़िए। • एक छोटी कहानी पढ़कर पाँच नए शब्द लिखिए। 5. रचनात्मक गतिविधियाँ 1. अपने प्रिय फल का चित्र बनाकर उस पर तीन वाक्य लिखिए। 2. आ, इ और ई की मात्रा के दो-दो शब्द चित्रों के साथ लिखिए। 3. अपनी छुट्टियों के बारे में पाँच वाक्य लिखिए। 6. मौखिक अभ्यास अपने परिवार के सदस्यों के नाम बताइए और उनके बारे में एक-एक वाक्य बोलिए। अभिभावकों के लिए संदेश: कृपया बच्चों को प्रतिदिन हिंदी पढ़ने और लिखने का अभ्यास करने में सहयोग दें। बच्चों को कार्य स्वयं करने के लिए प्रोत्साहित करें।
MATHS	1) Write multiplication tables from 2 to 10 one time in your notebook. 2) Measure 5 things at your home using your handspan (for example: table, TV, bed, window, book) and write their measurements in your notebook. 3) Draw and name one object from your home for each of the following shapes (a) circle (b) square (c) rectangle 4) Ask your parents about 3 things they bought recently. Write the name of each item along with its price in rupees. 5) Draw clock faces in your notebook and show the time for: (a) The time you wake up in the morning. (b) The time you eat your lunch.
Gardening	Day 1 – Meet a Plant Look at a plant near your home. Draw it and label any three parts you know. Day 2 – Seed Hunt Find two different seeds in the kitchen (with an adult). Draw them and write their names. Day 3 – Watering Time Water a plant gently if it needs water. Draw or write one thing you noticed. Day 4 – Leaf Shapes Observe two leaves. Draw them and describe them as big/small, smooth/rough, or round/long. Day 5 – What Plants Need Draw a plant and add the things it needs to grow: sunlight, air, water and soil. Day 6 – Reuse a Container

	With adult help, decorate a clean, used cup or small container as a planter. Do not make drainage holes yourself. Day 7 – Seed Sprouting With adult help, place a few beans on damp cotton in a small container. Draw what it looks like today. Day 8 – Garden Helpers Draw or name two living things that help a garden, such as butterflies, bees or earthworms. Day 9 – Keep Plants Healthy Pick up litter around a plant with adult supervision. Write one way to care for plants. Day 10 – My Garden Draw your dream garden with at least three plants. Give your garden a name.
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CLASS III

SUBJECT	HOMEWORK
ENGLISH	1. Select 5 new words from your ENGLISH or any book. Write each word, its meaning, and frame 1 simple sentence for each. 2. Write a 3-sentence diary entry describing how you spent the first day of your autumn break. Add a small drawing. 3. List 5 Proper Nouns (e.g., family member names, city) and 5 Common Nouns (e.g., table, spoon, lamp) found around your house. 4. Collect 3 fallen dry leaves, paste them on an A4 sheet to make a bird or animal figure, and write 4 descriptive sentences about it. 5. Write about a festival celebration, family gathering, or enjoyable outing during the vacation. 6. List 8 action words/verbs of things you see people doing at home or outside (e.g., cook, sweep, read, run, plant, smile) and draw pictures. 7. Read a story book and write a short review about that book. 8. Write one page of your English copy writing each day in your holidays. 9. Write about any five scientists and their discovery with pictures.
HINDI	1. अपना परिचय लिखिए। 2. प्रतिदिन दिनांक के साथ 5 लाइन का सुलेख लिखें, जो आपके अभिभावक (parents) द्वारा जाँचा और सुधारा जाए। 3. निम्नलिखित शिक्षण-अधिगम सामग्री (TLM) माँ के सहयोग से बनाएँ। उस पर बच्चे और माँ का नाम लिखा जाए: • रोल नंबर 1-10: मात्राएँ • रोल नंबर 11-20: वर्णमाला/स्वर-व्यंजन • रोल नंबर 21-30: नाम वाले शब्द - संज्ञा • रोल नंबर 31-42: काम वाले शब्द - क्रिया

MATHS	1. Use a ruler or measuring tape to measure the length of 4 objects at home (e.g., pencil box, notebook, table edge, water bottle). Record in cm. 2. Find 4 symmetrical objects at home or in the garden (e.g., leaf, book, handkerchief). Draw them and mark their line of symmetry with a dotted line. 3. Create a fake bill for 5 festival items (sweets, toys, fruits, etc.). Add up individual prices to find the Total Bill amount in rupees (₹). 4. Create a scenery or house using only paper-cut geometric shapes (circles, squares, rectangles, triangles). Count and label how many of each you used. 5. Check the weight printed on 3 kitchen items (e.g., rice packet, salt, biscuits). Write them down and sort them from lightest to heaviest (g/kg). 6. Write and solve 1 real-life addition word problem based on a holiday event (e.g., collecting flowers or sharing sweets with family). Show steps clearly. 7. Write and solve 1 real-life subtraction word problem based on a vacation situation (e.g., money spent or items given away). Show statements and steps. 8. you bought things as pens-55RS, pencil-75RS, bag-150 RS and water bottle-8RS total how much money you spent. Calculate how much change you would get back if you paid the shopkeeper with a ₹500 note.
TWAO	1. Write 5 uses of water. 2. What are the ways to avoid wasting water? 3. Draw a simple map of your home and three nearby places. 4. Make a daily routine chart showing time for waking up, meals, study, play and sleep. 5. Name 5 birds in your surroundings. 6. Draw a poster on "Save Trees, Save Earth". 7. Write 3 differences between biodegradable and non-biodegradable waste. 8. Draw a nature scene and write 5 sentences about it.
COMPUTER	1. Share 12 pencils equally among 3 children. How many pencils will each child get? 2. Draw 8 sweets and divide them equally between 2 children. 3. Write three examples of equal sharing in daily life. 4. Make two of your own sharing problems and solve them. 5. Write ten three-digit numbers. 6. Write the expanded form of 235, 416 and 582. 7. Make the greatest and smallest numbers using the digits 2, 7 and 5 without repetition. 8. Create five number puzzles using hundreds, tens and ones.

CLASS IV

SUBJECT	HOMEWORK
ENGLISH	1.PRACTICE HANDWRITING – COPYBOOK 5 PAGES 2. PREPARE A HEALTHY LIFESTYLE POSTER 3. WRITE A LETTER TO YOUR FRIEND DESCRIBING HOW YOU ARE SPENDING YOUR AUTUMN BREAK HOLIDAYS 4.MAKE A MINI DICTIONARY 5 NAMING WORDS, 5 ACTION WORDS, 5 DESCRIBING WORDS AND 5 WORDS RELATED TO HEALTHY WRITE THE MEANING OF EACH WORD AND USE IT IN A SENTENCE 5. READ ANY ONE ENGLISH STORY AND DRAW YOUR FAVOURITE CHARACTER AND WRITE 5 SENTENCES ABOUT IT
HINDI	1. अपना परिचय लिखिए। 2. प्रतिदिन दिनांक के साथ 5 लाइन का श्रुतलेख (dictation) लिखें, जो आपके अभिभावक (parents) द्वारा बोला और सुधारा जाए। 3. निम्नलिखित शिक्षण-अधिगम सामग्री (TLM) माँ के सहयोग से बनाएँ। उस पर बच्चे और माँ का नाम लिखा जाए: A BOOKLET OF 10 PAGES(7CM*8 CM) • रोल नंबर 1-10: संज्ञा • रोल नंबर 11-20: सर्वनाम • रोल नंबर 21-30: क्रिया • रोल नंबर 31-40: विशेषण
MATHS	1)Write 4 - digit additions and subtractions (per day 3 sums) 2)Prepare a chart on Indian Currency that represents coins,fake notes. 3)Write tables 1-10 on one day and 11-20 tables on next day. 4)Make a chart on 3-D shapes and mention their faces, edges and corners.
TWAO	1.Draw a simple map of your neighborhood. Mark the 4 main directions (North, South, East, West) and 5 landmarks (e.g., store, tree, park). 2.Choose a favorite dish eaten during the break. Draw a 4-step flowchart showing its journey from the farm to your plate. 3.Interview a grandparent or elder: ask how they traveled to school and what games they played. Write down their answers in 4-5 sentences. 4.Set up a water bowl or simple bird feeder on your balcony/roof. Observe visiting birds and write a short description of one visitor. 5.write about your favorite scientist and his/her discovery with pictures. 6.Make a craft from “best out of waste”. 7.Make any five riddles on different things. 8.draw the life cycle of Frog.

COMPUTER	1. Write the number names of 2,345 and 4,608. 2. Write the place value of each digit in 3,572. 3. Arrange in ascending order: 2,456; 2,654; 2,465; 2,564. 4. Write two examples of objects that are measured in kilograms. 5. Write two examples of liquids that are measured in litres. 6. Complete the patterns: - 2, 4, 6, 8, ____, ____ - 5, 10, 15, 20, ____, ____ - 3, 6, 12, 24, ____, ____ 7. Make two number patterns of your own.
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CLASS V

SUBJECT	HOMEWORK
ENGLISH	1 Write an essay on 'conservation of water' (10 sentences). 2. Find out techniques for cleaning water tanks. 3.Name 5 indoor and 5 outdoor games. 4. Make a chart of parts of speech with examples. 5. Draw a picture of your water tank. 6. Do 5 lines handwriting daily.
HINDI	□ Day-wise योजना दिन 1 - पाठ 8- काजीरंगा राष्ट्रीय उद्यान की यात्रा से 10 पशु पक्षियों के नाम लिखें और उनके चित्र बनाएं। दिन 2 - अपने पालतू जानवर के साथ फोटो चिपकाएँ और उसकी विशेषता लिखें। दिन 3 - प्रकृति और वन्य जीव की सुरक्षा कैसे करें इस पर एक पोस्टर बनाएं और कुछ वाक्य लिखें। दिन 4- फूल या फूलों का गुलदस्ता का ओरिगामी क्राफ्ट बनाएं। दिन 5 - अपनी पाठ्यपुस्तक के पाठ 8 से 10 शब्दों के अर्थ लिखकर वाक्य प्रयोग करें और शुद्ध उच्चारण के साथ पढ़ें। दिन 6 - 'क वर्ग' और 'च वर्ग' बारहखड़ी का अभ्यास करें और लिखें। दिन 7 - 10 क्रिया शब्दों को लिखें। दिन 8 - 10 विशेषण शब्दों को संज्ञा शब्दों के साथ लिखें। जैसे अच्छा दोस्त। दिन 9 - 5 सुविचार को लिखकर उनको सही ढंग से पढ़ने का अभ्यास करें। दिन 10 - छोट्टियों में अब तक आपने क्या सीखा - उस पर 10 पंक्तियाँ लिखें। □ निर्देश : प्रतिदिन केवल 1 कार्य करना है। साफ-सुथरी और सुंदर लिखावट का ध्यान रखें। चित्र बनाते समय रंगों का प्रयोग करें।
MATHS	1. Write about Indian mathematician 2. Make different types shapes and where we find in our daily life 3. Write properties of Quadrilaterals 4. Write and learn 20 tables 2 times 5. Write and learn 20 squares 6. Write essay about maths in daily life how much it is useful to you in A4 paper

TWAU	1. Make a collage by pasting pictures depicting vibrant India. 2. Pick a fruit or vegetable that grows in your state. It may have varieties. With the help of your elders make a list of how many types and varieties of fruits and vegetables are locally known. 3. Draw a sketch of marine life including coral reef. 4. Write names of different types of energy. 5. Write uniqueness of a place you have visited in Autumn break (variety of plants, animals, culture and traditions). 6. Map pointing (All states of India)
COMPUTER	1. Write five examples of places or objects that are near you. 2. Write five examples of places or objects that are far away. 3. Compare the distances between your home, school, and a nearby shop. 4. Draw two objects to show near and far. Draw and name five different shapes. 5. Make a colourful pattern using circles, squares, and triangles. 6. Complete five number or shape patterns. 7. Find and draw five shapes you see in your home.

Class 6th

1. Reading & Literature Activity

Task: Book Review & Summary

- **Book Recommendation:** Read any one storybook (*Panchatantra*, *Aesop's Fables*, *Malgudi Days*, or *Harry Potter and the Philosopher's Stone*).
- **Assignment (on an A4 sheet):**
 1. **Book Details:** Title, Author, and main characters.
 2. **Summary:** Write a short summary of the story in 80–100 words.
 3. **Moral/Takeaway:** What did you learn from the story?
 4. **Illustration:** Draw or paste a picture of your favorite scene or character.

2. Creative Writing & Journaling

Choose and complete any **two** of the following:

- **Diary Entry:** Write a diary entry (60–80 words) describing the happiest day of your autumn vacation.
- **Informal Letter:** Write a letter to your friend describing how you spent your holidays and the new hobbies you started.
- **Paragraph Writing:** Write a paragraph (80–100 words) on the following topics:

☐ My Favourite Teacher

☐ Importance of Discipline in Student Life

☐ My School Library

☐ The Importance of Sports and Games

☐ **Notice Writing(Any three):**

☐ Question 1: You are the Secretary of the English Literary Club of your school. Draft a notice informing students about an inter-house debate competition to be held next week.

☐ Question 2: You are the Head Boy/Head Girl of your school. Write a notice informing students about a tree plantation drive organised by the Eco Club.

☐ Question 3: You have lost your school identity card in the playground. Write a notice for the school notice board requesting students to help you find it.

☐ Question 4: Your school is organising an educational trip to a historical monument. Draft a notice inviting interested students to register their names.

Question 5: Your school is organising a creative writing competition for Classes IX and X. Write a notice mentioning the date, venue, eligibility, and registration details.

ENGLISH GRAMMAR ASSIGNMENT

Section A: Nouns (5 Marks)

Q1. Identify the nouns in the following sentences. ($1 \times 3 = 3$)

1. Riya reads a book every evening.
2. The children are playing in the garden.
3. Honesty is the best policy.

Q2. Write the plural forms of the following nouns. ($1 \times 2 = 2$)

1. Child – _____
2. Leaf – _____

Section B: Pronouns (4 Marks)

Q3. Fill in the blanks with suitable pronouns. ($1 \times 4 = 4$)

1. Rohan is my friend. _____ is very helpful.
2. My sister and I are students. _____ study together.
3. This is my book. It belongs to _____.
4. The dog is hungry. Give _____ some food.

Section C: Verbs and Tenses (6 Marks)

Q4. Fill in the blanks with the correct forms of the verbs given in brackets. ($1 \times 4 = 4$)

1. She _____ to school every day. (go)
2. They _____ football yesterday. (play)
3. I _____ my homework now. (do)
4. We _____ the zoo tomorrow. (visit)

Q5. Identify the tense of each sentence. ($1 \times 2 = 2$)

1. He is reading a storybook.
2. They visited their grandparents.

Section D: Articles and Prepositions (5 Marks)

Q6. Fill in the blanks with *a*, *an*, or *the*. ($1 \times 3 = 3$)

1. I saw _____ elephant at the zoo.
2. She is _____ honest girl.
3. _____ Sun rises in the east.

Q7. Fill in the blanks with suitable prepositions. ($1 \times 2 = 2$)

1. The cat is hiding _____ the table.
2. The school starts _____ 8 a.m.

Section E: Adjectives and Adverbs (4 Marks)

Q8. Identify the adjective in each sentence. ($1 \times 2 = 2$)

1. The beautiful garden has many flowers.
2. It was a cold morning.

Q9. Choose the correct word. ($1 \times 2 = 2$)

1. The tortoise walks (slow / slowly).
2. This is the _____ building in our town. (tall / tallest)

पीएम श्री केन्द्रीय विद्यालय श्रीकाकुलम

कक्षा - 6

शरद ऋतु अवकाश गृह कार्य (2026-27)

1. निम्नलिखित में से किन्हीं एक विषय पर 100-120 शब्दों में अनुच्छेद लिखिए।

1. मेरा विद्यालय
2. पर्यावरण संरक्षण
3. समय का सदुपयोग

2. पत्र लेखन-

घर पर आवश्यक कार्य होने के कारण दो दिन के अवकाश हेतु आपके विद्यालय के प्राचार्य को प्रार्थना पत्र लिखिए।

3. कहानी लेखन

निम्नलिखित संकेतों के आधार पर एक रोचक कहानी लिखिए तथा उचित शीर्षक और शिक्षा भी दीजिए।

एक प्यासा कौआ — पानी की तलाश — घड़ा दिखाई देना — घड़े में कम पानी — कंकड़ डालना — पानी ऊपर आना — कौए का पानी पीना।

4. संज्ञा की परिभाषा लिखिए तथा उसके पाँच उदाहरण वाक्यों सहित दीजिए।

5. सर्वनाम की परिभाषा लिखिए तथा पाँच सर्वनाम शब्दों की सूची बनाइए।

6. विशेषण की परिभाषा लिखिए तथा पाँच वाक्य बनाइए जिनमें विशेषण शब्दों को रेखांकित किया गया हो।

7. चित्र-वर्णन

प्रकृति, विद्यालय, बाजार या किसी पार्क का एक चित्र बनाइए अथवा चिपकाइए। उसके आधार पर कम-से-कम दस वाक्य लिखिए।

8. शब्द-भंडार

प्रतिदिन पढ़ने, समाचार सुनने या बातचीत के दौरान पाँच नए हिंदी शब्द खोजिए। उनका अर्थ लिखकर प्रत्येक शब्द का एक वाक्य बनाइए। कुल 10 शब्द लिखिए।

9. संवाद लेखन : विद्यालय में होने वाले वार्षिक महोत्सव की तैयारियों के विषय में बातचीत करते हुए दो मित्रों के बीच संवाद लेखन कीजिए।

10. सुलेख : 5 पन्ने (पेज) सुलेख लिखिए।

CLASS VI SANSKRIT

शरत् कालीन अवकाश गृह कार्यं संस्कृत

षष्ठी –

- 1 . प्रतिदिनं एकः श्रुत लेखः अनुच्चेदः लिखत। (Write everyday an easy Sanskrit dictation from your Sanskrit text book, which will be dictated by parents, write in a separate small note book)
- 2 . " शूरा वयं धीरा वयं "पाठस्य गीतम् द्विवारं लिखित्वा स्मरणं कुर्वन्तु । (Write two times शूरा वयं धीरा वयं song in your Home work note book, and by hard)
- 3 पञ्चविंशति संस्कृत पदानि लिखित्वा स्मरणं कुर्वन्तु। (Write 25 Sanskrit words in Home work notes and by hard)

VI - CLASS | HOMEWORK - MATHS

1. Write first 30 square numbers and 20 cube numbers.
2. Write first 20 Triangular numbers and 20 Virahanka numbers.
3. Write 100 even numbers and odd numbers.
4. Write the names of Regular Polygons with diagrams.
5. Define Line, Segment, Ray, Angle.
6. Types of Angles with diagrams.
7. Use a Protractor to draw angles having the following degree measures:
i) 20° ii) 105° iii) 180° iv) 90°
v) 360° vi) 0° vii) 235° viii) 63°
8. Write 10 examples of Palindromic numbers.
9. How many rounds does your year of birth take to reach the Kaprekar constant?
10. Write 1 to 100:
i) Prime numbers
ii) Twin prime numbers
iii) Composite numbers
11. Find the prime factorisations of the following numbers:
i) 64 ii) 81 iii) 1024 iv) 729
12. Find the common factors of:
i) 12 and 18 ii) 15 and 27 iii) 32 and 45
13. Find Perimeter and Area:
i) Length = 5 cm, Breadth = 6 cm
ii) Length = 3 m, Breadth = 20 cm
iii) Length = $5\frac{1}{2}$ m, Breadth = $3\frac{1}{2}$ m
14. Write 20 tables in 2 times.
15. LCM →
i) 12 and 18
ii) 6, 10 and 16
iii) 8, 16 and 24
16. Write the names of Regular Polygons with diagrams.

17. Write the information:

- i) Srinivasa Ramanujan
- ii) Aryabhata
- iii) Shakuntala Devi

Class vi
Science
Autumn break home work

1. Write material around us and temperature and its measurement in Learner Diary (LD).
2. Make
 - i. 10 fill in the blanks from the lesson Temperature and Its Measurement (H.W.)
 - ii. 10 very short questions from Temperature and Its Measurement (H.W.)
3. Write Art Integrated Project in A4 – Write proteins and vitamin sources in 5 food items each and paste pictures also
4. Find out the hottest and coldest part in India and write the maximum and minimum temperature recorded in October 1st week 2026 (H.W.)
5. Write key words from Chapter 8 (H.W.)

Autumn Break Holiday Homework – SOCIAL SCIENCE

1. Locate the Continents and Oceans

Locate and label all the continents and oceans on a world map.

2. Natural Disasters

Find facts about any of the following natural disasters: earthquake, tsunami, flood, or cyclone. Write about their causes and effects, and give one example of each disaster.

3. Role of Government

Talk to your parents and elders, and write about the role of government in our daily life.

4. Read the Lessons from Your Textbook

Read the following lessons:

- Oceans and Continents
- Grassroots Democracy – Part II

5. Learn Key Words from the Glossary

Learn five keywords every day from the glossary given in your textbook (pages 209–217).

6th class

KENDRIYA VIDYALAYA

AUTUMN BREAK HOLIDAY HOMEWORK

Class: VI

Subject: Computational Thinking and Artificial Intelligence (CTAI)

Instructions:

1. Complete all activities neatly in your notebook.
2. Draw diagrams wherever required.
3. Write answers in your own words.
4. Write lesson name first.

Part A – Computational Thinking

1. Number Patterns

- Write five number patterns.
- Write the next three numbers in each pattern.
- Example: 2, 4, 6, 8, __, __, __.

2. Lines and Angles

- Draw and label an acute angle, a right angle, an obtuse angle and a straight angle.
- Write one real-life example for each angle.

3. Number Play

- Write all the factors of 24 and 36.
- Find the common factors of 24 and 36.
- Write the first five multiples of 7.

4. Data Handling

1. Conduct a survey of 10 family members or friends about their favourite fruit.
2. Prepare a table showing the number of people who like each fruit. Draw a bar graph based on the data.

Part B – Artificial Intelligence

5. AI Around Us

1. Write five examples of Artificial Intelligence used in daily life. Mention how each example helps people.

6. Data Collection Activity

Collect information about the favourite colours of 10 classmates or family members.

- Organise the information in a table.
- Identify the most popular colour.
- Represent the data using a bar graph.

7. Identify the Data Type

1. Write the data type for each item:

- a) Name of a student
- b) Number of books
- c) Photograph of a flower
- d) Recording of a song
- e) Marks obtained in an examination

8. Human Intelligence and AI

Write any three differences between human intelligence and Artificial Intelligence.

9. AI Learning

1. Write the names of the three types of learning in AI. Find one simple example of each.

10. Responsible Use of AI

1. Write five rules for using AI and digital devices safely and responsibly. Include privacy, password safety and checking information before using it.

Creative Activity

11. Make an AI Poster

Prepare a colourful poster on the topic:

“Artificial Intelligence in Our Daily Life”

Include at least four examples and draw suitable pictures.

Learning Reflection

12. Answer in 2–3 sentences:

- What new thing did you learn about AI?
- Which activity did you enjoy the most?
- How can Computational Thinking help you solve everyday problems?

Submission: Submit the completed homework after the autumn break.

PM SHRI KV SRIKAKULAM
AUTUMN BREAK HOME WORK (2026-2027)
(VI CLASS) SUBJECT : TELUGU

1. అచ్చులు, హల్లులు ఒక్కొక్కసారి రాయండి.
2. గుణింతాల గుర్తులు రాయండి.
3. ఒత్తులు రాయండి.
4. గుణింతాలు రాయండి.
5. ఐదు పండ్ల పేర్లు తెలుగులో రాయండి.
6. ఐదు జంతువుల పేర్లు తెలుగులో రాయండి.
7. నా కుటుంబం అనే అంశంపై ఐదు వాక్యాలు రాయండి.
8. మీకు ఇష్టమైన పండు బొమ్మ గీసి, దాని పేరు తెలుగులో రాయండి.
9. రోజూ ఒక తెలుగు పేరా చదివి సాధన చేయండి.

రాత అభ్యాసం: ప్రతిరోజు 1 పేజీ తెలుగు సులేఖనం (Handwriting) రాయండి.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK Homework 2026-27

Subject: ART EDUCATION

Class VI

1. Make a portrait of any one of your family member.
2. Draw one sketch/ drawing daily of the objects in your surroundings.

Autumn break homework

Subject: English

Class: VII

1. Imagine you can talk to animals for one whole day, just like Dr. Dolittle. Write an imaginative story or a diary entry (150–200 words) describing your conversation with a bird or a pet.
2. **Vocabulary Log:** Find 10 new or challenging words from Unit 1 or Unit 2 of your *Poorvi* textbook. Write down their synonyms and frame a meaningful sentence for each
3. Select any paragraph (at least 6 sentences) from any completed chapter and write all the verbs that you come across and identify their tenses (e.g., Simple Past, Present Continuous, Past Perfect)
4. Write 5 messages(Questions & Answers) on your own imagining situational conversations
5. Write three lost notices and two found notices on your own.

CLASS VII-HINDI

केंद्रीय विद्यालय श्रीकाकुलम

शीतकालीन अवकाश गृह कार्य

कक्षा सातवीं

निर्देश: सभी विद्यार्थी हिंदी की गृहकार्य कॉपी में प्रतिदिन दिए गए कार्य को सुंदर एवं सुव्यवस्थित लिखावट में पूरा करें

अपनी हिंदी पाठ्यपुस्तक से 20 कठिन शब्द चुनकर उनके अर्थ लिखिए तथा प्रत्येक शब्द से एक-एक वाक्य बनाइए।

निम्नलिखित विषय पर लगभग 120 शब्दों में अनुच्छेद लिखिए – 'स्वच्छता का महत्त्व'।

अपनी पाठ्यपुस्तक में पढ़े गए गिरिधर कविराय की कुंडलियां के आधार पर दो प्रश्न बनाइए और उनके उत्तर लिखिए।

निम्नलिखित मुहावरों के अर्थ लिखकर वाक्य बनाइए –

1. आँखों का तारा
2. दाँत खट्टे करना
3. नौ दो ग्यारह होना
4. हाथ पर हाथ धरकर बैठना
5. कमर कसना

निम्नलिखित विषय पर एक कहानी लिखिए – 'ईमानदारी का फल'। कहानी से मिलने वाली सीख भी लिखिए।

प्रतिदिन एक प्रश्न हिंदी का अवश्य पढ़ें।

CLASS VI SANSKRIT

शरत् कालीन अवकाश गृह कार्य संस्कृत

सप्तमी -

1. प्रतिदिनं एकः श्रुत लेखः अनुच्चेदः लिखत। (Write everyday an easy Sanskrit dictation from your textt book which will be dictated by parents, write in a separate small note book)
2. 1-50संस्कृत संख्याः पद रूपेण लिखत स्मरणं कुरुत।(Write in Home work note book 1-50 Sanskrit numbers in words and also by hard .)
3. दश फलानि, पुष्पाणि , वस्तूनां नामानि चित्रसहितं संस्कृत भाषायां लिखत एवं स्मरणं कुरुत। (Write ten fruits, flowers and objects names in Sanskrit with picture in Home work notes and by hard)

Autumn break Homework class 7 MATHS

1. Complete Half yearly question paper
2. Write 30 squares and 10 cubes
3. Write about Indian mathematician in A4
4. Construct a sudoku from news paper
5. Complete the worksheet given below

- 1) What number do you get if you add 1 to the largest 5-digit number.
- 2) According to the 2011 Census, the population of the town of Chintamani was about 75,000. How much less than one lakh is 75,000?
- 3) The estimated population of Chintamani in the year 2024 was about 106,000. How much more than one lakh is 106,000?
- 4) i) According to the 2011 Census, the population of the town of Chintamani was about 75,000. How much less than one lakh is 75,000?

(ii) The estimated population of Chintamani in the year 2024 was about 106,000. How much more than one lakh is 106,000?

(iii) By how much did the population of Chintamani increase from 2011 to 2024?
- 5) Write the nearest thousand of the number 6,72,85,183.
- 6) How many tens are required to make ten thousand?
- 7) Simplify the given expressions and find the numbers.
(a) $(50 \times 100) + (7 \times 10) + (2 \times 1) = ?$
(b) $(3 \times 1000) + (20 \times 100) + (72 \times 1) = ?$
- 8) Place commas and write the number name according to Indian and American system.
9876501234 , 4050678 , 48121620 , 20022002 , 246813579 ,
- 9) Compare and write ' $<$ ', ' $>$ ', ' $=$ '.
(a) 30 thousand 3 lakhs.
(b) 500 lakhs 5 million.
(c) 800 thousand 8 million.
(d) 640 crore 60 billion.

- 10) Write the nearest ten thousand of the number 6,72,85,183.
- 11) What will be the next digit (number) in the sequence 25.75, 26.25, 26.75 , ...
- 12) Write the expression “ 5 more than 2 times a number X”
- 13) Which is greater? $1023 + 125$ or $1022 + 128$?
- 14) Sonu is measuring some of his body parts. The length of Sonu’s lower arm is 2 units, and that of his upper arm is 3 units. What is the total length of his arm?
- 15) Find the sums
- (a) $5.3 + 2.6$ (b) $2.15 + 5.26$ (c) $9.01 + 9.10$
- 16) Write a story/situation for each of the following expressions and find their values.
- (a) $89 + 21 - 10$ (b) $5 \times 12 - 6$
- 17) A metro train ticket between two stations is ₹ 40 for an adult and ₹20 for a child. What is the total cost of tickets:
- (i) for four adults and three children?
- (ii) for two groups having three adults each?
- 18) Write these quantities in decimal form: (a) 234 hundredths, (b) 105 tenths, (c) 234 tenths.
- 19) Fill in the blanks: (a) 70 mm = ...cm b) mm=0.9 cm (c) 134 mm = ...cm
- 20) Fill in the blanks: (a) 36 cm = ...m (e) 4 cm = ...m (b) 325 cm = ... m (f) cm = 2.07 m

Class vii

Autumn break home work

1. Write key words from chapter 7 and 8
2. Write 10 fill in the blanks and very short questions from chapter 7
3. Write 10 fill in the blanks from chapter 8
4. Art-Integrated Science Project: Exploring the Three Modes of Heat Transfer —
Conduction, Convection and Radiation
5. What are the good practices for maintaining oral hygiene? Try to gather information on the same from books/newspapers/conversation with elders. Prepare a report.

CLASS VII – SOCIAL SCIENCE

1. Write down the big questions and exercise Q&A of the lesson “The Story of Indian Farming” HW notebook).

Big Questions: 1, 2, 3

Exercise: 1, 2, 3, 4, 5, 6

2. Write a short essay describing what farming might be like when you are 60 years old. You could also draw/paint a picture to illustrate what you envision. (SEA)

3. Poster making (presentation), with illustrations, regarding the issues affecting the Ganga Basin. Also suggest some solutions.

4. Read the lesson “The Story of Indian Farming” and underline the important points.

7th class ai Holiday Homework

KENDRIYA VIDYALAYA

AUTUMN BREAK HOLIDAY HOMEWORK – 2026–27

Class: VII

Subject: Computational Thinking and Artificial Intelligence (CTAI)

General Instructions

1. Complete all the work neatly in your notebook.
2. Write the chapter names and question numbers clearly.
3. Draw diagrams or tables wherever required.
4. Complete the activities using examples from daily life.

PART A – COMPUTATIONAL THINKING

Chapters 1–7 | Written Work and Activities

Chapter 1: Large Numbers Around Us

1. Write the place values of the digits in a 7-digit number.
2. Write any five large numbers used in daily life.
3. Write the population of any five Indian cities and arrange them in ascending order.
4. Activity: Prepare a place-value chart for a large number.

Chapter 2: Arithmetic Expressions

1. Define an arithmetic expression with two examples.
2. Solve:
 - a) $12 + 4 \times 3$
 - b) $(12 + 4) \times 3$
 - c) $40 - 18 \div 3$
3. Explain the importance of the order of operations.
4. Activity: Prepare five arithmetic expressions and find their answers.

Chapter 3: A Peek Beyond the Point

1. What is a decimal number system?
2. Explain the use of the decimal point with examples.

3. Write five decimal numbers used in daily life.
4. Activity: Collect examples of decimal numbers from prices, measurements or distances.

Chapter 4: Expressions using Letter-Numbers

1. What is a variable? Give two examples.
2. Identify the variables in:
 - a) $3x + 5$
 - b) $2a - 7$
 - c) $4p + 6$
3. Find the value of $2x + 3$ when $x = 5$.
4. Activity: Write five algebraic expressions using letters and numbers.

Chapter 5: Parallel and Intersecting Lines

1. Define parallel lines and intersecting lines.
2. Draw two examples of parallel lines.
3. Draw two examples of intersecting lines.
4. Activity: Identify parallel and intersecting lines in objects around your home.

Chapter 6: Number Play

1. Write five interesting number patterns.
2. Explain any one number pattern with an example.
3. Create a number puzzle for your classmates.
4. Activity: Prepare a number game and write its rules.

Chapter 7: A Tale of Three Intersecting Lines

1. Draw three lines intersecting at one point.
2. Draw three lines that intersect at different points.
3. Identify the intersection points in your drawings.
4. Activity: Create a diagram showing three intersecting lines and label the points clearly.

PART B – ARTIFICIAL INTELLIGENCE

Chapter 1: AI Domains and Applications

1. What is Artificial Intelligence (AI)?
2. Name the three major AI domains.
3. Explain Data Science, Computer Vision and Natural Language Processing (NLP).
4. Write two real-life applications of each AI domain.
5. Activity: Prepare a chart showing the three AI domains and their applications.

Chapter 2: AI in Industries

1. What is meant by AI in industries?
2. Write three applications of AI in healthcare.
3. Explain how AI is useful in education and transportation.
4. Write two benefits of using AI in industries.
5. Activity: Select any one industry and prepare a poster showing how AI is used in it.

Chapter 3: Data Visualization and Analysis

1. What is data?
2. What is data visualization?
3. Name three types of charts or graphs.
4. Explain why graphs are useful for understanding data.
5. Activity: Collect the favourite fruit choices of 10 family members or friends. Prepare a table and draw a bar graph using the collected data.

Creative Activities

1. Prepare an AI awareness poster with the slogan “AI for a Better Future.”
2. Write five examples of Computational Thinking in daily life.
3. Write five ways to use AI safely and responsibly.

Submission:

Complete the written work and activities neatly. Submit the homework after the autumn break.

Happy Holidays! Learn, Explore and Enjoy!

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK Homework 2026-27

Subject: ART EDUCATION

Class VII

1. Draw a Portrait of Sardar Vallabhbhai Patel Ji any medium (Pencil/ Charcoal/Oil Pastel/Colour Pencil).
2. Make a Miniature Painting in A3 size sheet.

Autumn break homework

Subject: English

Class: VIII

1. Write a short essay or reflective piece (200 words) titled "**An Inspiring Personality Who Changed India**", focusing on a visionary leader (like Dr. Verghese Kurien or Tenali Rama's clever problem-solving approach).
2. Highlight 3 key personality traits that made them successful and how you can apply those traits in your own life.
3. Pick 5 phrasal verbs or idioms from Unit 3 (*Mystery and Magic*) or Unit 5 (*Science and Curiosity*) and design a mini-comic strip (4 to 6 frames) where characters use these 5 idioms/phrasal verbs correctly in dialogue bubbles.
4. If you were Principal of the vidyalaya, what would you like to change in the vidyalaya. Write a paragraph in about 150 to 200 words
5. Write 5 examples of simple present, present continuous, present perfect and present perfect continuous tense.

1.

HINDI AUTUMN HOLIDAY HOMEWORK

केंद्रीय विद्यालय श्रीकाकुलम
शरद कालीन अवकाश गृह कार्य
कक्षा आठवी

शब्द ज्ञान

1. पाठ में से पाँच कठिन शब्द चुनकर उनके अर्थ लिखिए।
2. निम्नलिखित शब्दों के विलोम लिखिए — सुख, प्रेम, अमीर, अपना, सम्मान।
3. निम्नलिखित शब्दों के पर्यायवाची लिखिए — पृथ्वी, घर, जल, मित्र, आँख।

1. व्याकरण अभ्यास

निम्नलिखित मुहावरों के अर्थ लिखकर वाक्य बनाइए:

- आँखें खुलना
- मन पसीजना
- सिर झुकाना
- दिल जीतना
- हाथ बँटाना

निम्नलिखित शब्दों से वाक्य बनाइए — ममता, संवेदना, आत्मीयता, सम्मान।

2. लेखन-कौशल

मूल्यपरक प्रश्न: यदि आप जमींदार की जगह होते, तो वृद्धा के साथ कैसा व्यवहार करते? 60–80 शब्दों में लिखिए।

3. रचनात्मक लेखन

1. मेरा प्रिय त्योहार

4. विशेष्य और विशेषण से संबंधित

रचनात्मक कार्य (A4 शीट पर): विशेष्य एवं विशेषण की परिभाषाएँ लिखते हुए दोनों के पाँच-पाँच उदाहरण दीजिए। उदाहरणों में विशेषण और विशेष्य को अलग-अलग रंगों से रेखांकित कीजिए तथा कार्य को सुंदर एवं सुव्यवस्थित ढंग से प्रस्तुत कीजिए।

नोट -प्रतिदिन हिंदी का एक प्रश्न अवश्य पढ़ें ।

HINDI AUTUMN HOLIDAY HOMEWORK

VIII - SANSKRIT

शरत् कालीन अवकाश गृह कार्य संस्कृत 6-10

अष्टमी -

1. प्रतिदिनं एकः श्रुत लेखः अनुच्चेदः लिखत। (Write everyday an easy Sanskrit dictation from your textt book which will be dictated by parents, write in a separate small note book)

2.1-50संस्कृत संख्याः पद रूपेण लिखत स्मरणं कुरुत।(Write in Home work note book 1-50 Sanskrit numbers in words and also by hard .)

3. पञ्च दश फलानि, पुष्पाणि , वस्तूनां नामानि चित्रसहितं संस्कृत भाषायां लिखत एवं स्मरणं कुरुत।(Write fifteen fruits, flowers and objects names in Sanskrit with picture in Home work notes and by hard)

VIII MATHS HOMEWORK

Complete Half yearly question paper

1. Write 30 squares and 10 cubes
2. Write about Indian mathematician in A4
3. Construct a sudoku from news paper
4. Write properties of Quadrilaterals
5. Complete the worksheet given below

गृह कार्य / HOME ASSIGNMENT		Date.....
कालांश/PERIOD	विवरण / Particulars	
Maths	1) Simplify $(2^3)^2 \times 2^4$	
	2) If $(\frac{3}{2})^x \times (\frac{2}{3})^3 = (\frac{3}{2})^7$ find x	
	3) $a^2b^3c^4 \div abc^2$	
	4) Simplify $(3^5 \times 3^4) \div 3^8$	
	5) Express 4096 in exponential form	
	6) Express in exponential form 125×4	
	7) $\frac{3}{4} + \frac{5}{6} - \frac{2}{3}$	

गृह कार्य / HOME ASSIGNMENT		Date.....
कालांश/PERIOD	विवरण / Particulars	
	8) $6\frac{1}{3} - 2\frac{1}{2}$	
	9) 90% of 3000	
	25% of 372	
	20% of 80% of 800	
	10) Simplify $\frac{12^4 \times 4^3 \times 4}{6^3 \times 8^2 \times 21}$	
	11) Information $(3^{-1} + 4^{-1} + 5^{-1})^2$	
	12) $(6x+21)(2x+7)$	

गृह कार्य / HOME ASSIGNMENT		Date.....
कालांश/PERIOD	विवरण / Particulars	
	13) $(P+Q)(Q+R)(R+P)$	
	14) Information of	International
i)	Srinivasa Ramanujan	i) Pythagoras
ii)	Anyabhata	ii) Euclid
iii)	Bhaskara-II	iii) Carl Friedrich
iv)	P.C Mahabharis	Gauss
v)	Shakti Devi	

Class 8th

Subject - science

Autumn HHW

Q.1. Write 10 keywords from Chapters 7 and 8.

Q.2. Identify different states of matter in your surroundings (solid, liquid, gas).

Q.3. Prepare a simple flowchart showing changes of state (melting, freezing, evaporation, condensation).

Q.4. Find out two daily-life examples where the change of state is useful.

Q.5. (Art-Integrated Activity) Design and create simple models/structures to represent particles of solids, liquids, and gases, showing interparticle spacing using clay balls, beads, etc. (A4 sheet).

Autumn Break Holiday Home-work

Class- 8th social science

Chapter 4 - The Colonial Era in India

DESCRIPTIVE QUESTIONS (answer these questions)- do on class work copy

1. What is colonialism? Give three main features of colonialism.
2. What were the main reasons that attracted European powers like the Portuguese, Dutch, French and British to India?
3. How did the Portuguese control trade in the Arabian Sea? What was the Cartaz system and the Inquisition in Goa?
4. Who was Rani Abbakka? How did she resist the Portuguese?
5. How did the English East India Company change from being traders to becoming rulers? Explain the policy of 'Divide and Rule' with the example of Battle of Plassey (1757) and Mir Jafar.
6. What was the Doctrine of Lapse? Who introduced it and how did it work?
 - Why did it disregard Indian tradition of adoption?
 - How did it lead to resentment and contribute to the Revolt of 1857?
7. What was the Subsidiary Alliance system? Explain its main conditions.
 - What was the role of the British 'Resident'?
 - Why was Hyderabad the first state to enter this alliance in 1798?
 - Why was it called 'an empire on the cheap'?
8. What is the difference between Doctrine of Lapse and Subsidiary Alliance? How did both help the British control vast territories without direct administrative cost?
9. How did British economic policies harm India? Explain ruthless taxation, famines (1770-72, 1876-78), deindustrialization and drain of wealth.
10. What does the phrase "Indians funded their own subjugation" mean in context of railways and telegraph?

11. How did the British destroy the Indian village system and education system? What did Charles Metcalfe mean by "village communities are little republics" and Macaulay by "brown Englishmen"?

12. Why did tribal communities rebel? Describe Kol Uprising (1831-32) and Santhal Rebellion (1855-56) led by Sidhu and Kanhu Murmu.

13. On the timeline given in the chapter, mark and write one sentence about:

- a) 1674 - French post at Pondicherry
- b) 1741 - Battle of Colachel
- c) 1757 - Battle of Plassey
- d) 1798 - Subsidiary Alliance in Hyderabad

MAP / TIMELINE POINTING QUESTIONS: do on separate Indian map and paste in activity book.

14. On an outline map of India locate and label:

- a) Goa, Pondicherry, Surat, Madras, Bombay, Calcutta
- b) Hyderabad - first state under Subsidiary Alliance
- c) Plassey (Palashi) - 150 km north of Kolkata
- d) Princely states annexed under Doctrine of Lapse - Jhansi, Satara, Nagpur

8th class AI Holiday Homework

KENDRIYA VIDYALAYA

Autumn Break Holiday Homework – 2026–27

Class: VIII Subject: Computational Thinking and Artificial Intelligence (CTAI)

Syllabus Covered:

- * Part A – Computational Thinking: First 7 chapters
- * Part B – Artificial Intelligence: First 3 chapters

General Instructions

- * Complete all written work neatly in your notebook.
- * Write answers in your own words.
- * Complete all activities and draw diagrams wherever necessary.
- * Submit the homework after the autumn break.

Part A – Computational Thinking

Chapters 1–7

Chapter 1: Introduction

- * Define Computational Thinking.
- * List the important skills of Computational Thinking.
- * Explain decomposition and pattern recognition with examples.
- * Write five real-life problems that can be solved using Computational Thinking.

Chapter 2: How to Use This Book?

- * Write the names of the chapters covered in Part A.
- * Choose one activity from the textbook and explain the steps to complete it.
- * Write how step-by-step instructions help us solve problems.

Chapter 3: A Square and a Cube

- * Find the squares of 3, 5, 7, 9 and 12.
- * Find the cubes of 2, 3, 4 and 6.
- * Differentiate between the square and cube of a number.
- * Create and solve three number puzzles based on squares and cubes.

Chapter 4: Power Play

- * Explain the use of powers in representing large numbers.

- * Create two puzzles based on powers and solve them.

Chapter 5: A Story of Numbers

- * Write the names of the number systems discussed in the chapter.
- * Explain the binary number system with examples.
- * Convert decimal 85 into binary.
- * Convert binary 100100 into decimal.
- * Write a short note on the importance of number systems in computers.

Chapter 6: Quadrilaterals

- * Define a quadrilateral.
- * Draw and label a square, rectangle, parallelogram, rhombus and trapezium.
- * Write two properties each of a square and a rectangle.
- * Differentiate between a square and a rhombus.
- * Draw any four quadrilaterals and mark their sides and angles.

Chapter 7: Number Play

- * Solve five number puzzles of your choice.
- * Identify the pattern and write the next three numbers: 2, 6, 12, 20, 30, __, __, __.
- * Create three number sequences and explain their patterns.
- * Explain how logical thinking helps in solving number puzzles.

Part B – Artificial Intelligence

Chapters 1–3

Chapter 1: AI Project Lifecycle

- * Define Artificial Intelligence.
- * Write the six stages of the AI Project Lifecycle in the correct order.
- * Explain any three stages of the AI Project Lifecycle.
- * Select one problem in your school and explain how AI could help solve it.
- * Draw a flowchart of the AI Project Lifecycle.

Chapter 2: Artificial Intelligence and Its Applications

- * Write five applications of AI in daily life.
- * Explain the use of AI in healthcare, smartphones and navigation apps.
- * Write three examples of AI that you observe in everyday life.
- * Explain how AI can make our lives easier.
- * Prepare a chart titled “AI Around Us” showing at least five applications and their uses.

Chapter 3: Data and Fairness in AI

- * Define data and explain why it is important for AI.
- * How does AI use data to recognise patterns?
- * What is fairness in AI?
- * Give two examples of how biased or incomplete data can produce unfair results.
- * Write five ways to make AI systems fairer and more reliable.

Activity-Based Homework

Activity 1: Computational Thinking

Prepare a flowchart showing the steps involved in completing a daily activity, such as preparing for school.

Activity 2: Mathematics Chart

Prepare a chart showing squares, cubes, powers and number patterns with suitable examples.

Activity 3: Quadrilateral Chart

Draw and label five types of quadrilaterals. Mention two properties of each.

Activity 4: AI Poster

Create a colourful poster on “Applications of Artificial Intelligence in Daily Life.”

Create a colourful poster on “Applications of Artificial Intelligence in Daily Life.”

Activity 5: Data Collection

Survey 10 family members or classmates about their preferred learning method: books, videos or practical activities. Present the results in a table or bar graph and write two conclusions.

Submission Checklist

- * Complete written questions from Part A.
- * Complete written questions from Part B.
- * Prepare the five activities/charts.
- * Check spelling, neatness and labelling before submission.

Note: Complete the activities and submit all work after the autumn break.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK Homework 2026-27

Subject: ART EDUCATION

Class VIII

1. Make a Welcome Card (size 18cm × 35cm) and decorate by using waster colour magazine or newspaper paper.
2. Make a Rajasthani miniature painting ‘ **Bani Thani**’ in A4 size drawing sheet

Class 9th ENGLISH

Reading & Critical Writing

- **Book Review:** Read a novel or classic of your choice (e.g., *Three Men in a Boat*, *The Story of My Life*, or *The Boy in the Striped Pyjamas*). Write a 150-word review covering:
 1. Setting and main character analysis.
 2. The primary conflict and resolution.
 3. Personal key learnings.
 - 4.
- **Diary Entry:** Write a diary entry (100–120 words) from the perspective of Sudha Murty from " *How I taught My Grandmother to Read*".
- **Descriptive Paragraph:** Write a descriptive paragraph (100–120 words) describing a memorable event or person you met during vacation.
- **Grammar Work:** Solve 10 questions each on:
 - Integrated Grammar (Editing and Omission)
 - Modals and Subject-Verb Concord

C. Create portfolio of your own .

Error Correction / Editing

Identify the error in each line of the passage and write the **Incorrect** word along with the **Correct** word.

Line	Passage Snippet	Incorrect	Correct
1.	Pollution is one of the most serious problem facing	_____	_____
2.	humanity today. It adversely affect our health and	_____	_____
3.	environment. Air pollution are caused mainly by	_____	_____

Line	Passage Snippet	Incorrect	Correct
4.	vehicle emissions, whereas waste dumping pollute	_____	_____
5.	water bodies. We must took immediate action.	_____	_____

Exercise 2: Reported Speech Conversions (5 Marks)

Convert the following direct speech dialogues into reported speech:

- Rohan:** "Where are you going for your summer vacation?"
 o *Rohan asked me*
 _____.
- Teacher:** "Do not waste your precious time during the holidays."
 o *The teacher advised the students*
 _____.
- Priya:** "I have completed all my grammar assignments today."
 o *Priya stated that*
 _____.
- Father:** "Will you help me clean the garden tomorrow?"
 o *Father asked his son*
 _____.
- Anita:** "What a beautiful painting this is!"
 o *Anita exclaimed with delight that*
 _____.

Exercise 3: Subject-Verb Concord & Modals (Fill in the Blanks)

Fill in the blanks with the correct form of verbs or appropriate modal auxiliaries:

- Neither the teacher nor the students _____ (was / were) present in the hall.
- Bread and butter _____ (is / are) his preferred breakfast.
- Every boy and girl in the team _____ (has / have) submitted the project.
- You _____ (must / ought) follow the traffic rules strictly to avoid accidents.
- _____ (May / Could) you please lend me your notebook for a day?

(Important Note: Write this homework in your activity book)

CLASS IX-HINDI

केंद्रीय विद्यालय श्रीकाकुलम
शरदकालीन अवकाश गृहकार्य

कक्षा नवमी

(क) कविता – 'झाँसी की रानी'

1. 'झाँसी की रानी' कविता की कवयित्री कौन हैं?
2. रानी लक्ष्मीबाई के व्यक्तित्व की प्रमुख विशेषताएँ लिखिए।
3. रानी लक्ष्मीबाई ने अंग्रेजों का सामना किस प्रकार किया?
4. कविता में रानी लक्ष्मीबाई की वीरता का वर्णन अपने शब्दों में कीजिए।
5. इस कविता से आपको क्या प्रेरणा मिलती है?

(ख) पाठ – 'आखिरी चट्टान तक'

1. पाठ के शीर्षक 'आखिरी चट्टान तक' का क्या आशय है?
2. लेखक की यात्रा के दौरान किन कठिनाइयों का सामना करना पड़ा?
3. पाठ में वर्णित प्रकृति के सौंदर्य का वर्णन कीजिए।
4. इस पाठ से आपको क्या सीख मिलती है?

2. शब्द-ज्ञान

1. 'झाँसी की रानी' कविता से पाँच कठिन शब्द चुनकर उनके अर्थ लिखिए।
2. कविता से पाँच तुकांत शब्द लिखिए।
3. 'आखिरी चट्टान तक' पाठ से पाँच कठिन शब्द चुनकर उनके अर्थ लिखिए।
4. निम्नलिखित शब्दों के विलोम लिखिए – वीर, स्वतंत्र, कठिन, सुंदर, साहस।

3. व्याकरण अभ्यास

1. संज्ञा, सर्वनाम, विशेषण और क्रिया की परिभाषाएँ उदाहरण सहित लिखिए।
2. निम्नलिखित मुहावरों के अर्थ लिखकर वाक्य बनाइए:
 - कमर कसना
 - दाँत खट्टे करना
 - हिम्मत हारना
 - आँखों का तारा होना
 - जान पर खेलना

4. रचनात्मक कार्य

A4 शीट पर: 'वीरता और साहस का महत्त्व' विषय पर लगभग 100 शब्दों में अनुच्छेद लिखिए। लेखन को सुंदर एवं सुव्यवस्थित रूप में प्रस्तुत कीजिए।

5. परीक्षा अभ्यास

1. रानी लक्ष्मीबाई को वीरांगना क्यों कहा जाता है? लगभग 60 शब्दों में लिखिए।
2. 'झाँसी की रानी' कविता का केंद्रीय भाव लिखिए।
3. 'आखिरी चट्टान तक' पाठ के शीर्षक की सार्थकता स्पष्ट कीजिए।
4. दोनों रचनाओं में से आपको कौन-सी रचना अधिक प्रेरणादायक लगी और क्यों?

CLASS IX SANSKRIT

शरत् कालीन अवकाश गृह कार्य संस्कृत

नवमी -

1. दश क्रिया पदानि पञ्च लकारेषु लिखत।
2. द्वितीय आवधिक परीक्षायाः प्रश्नोत्तराणी अन्य पुस्तिका मध्ये लिखत।
3. अस्मद्, युष्मद् शब्द रूपाणि अर्थासहितं लिखत।

Autumn break Homework

CLASS –IX MATHS

Activitys :

1. Find unhide picture in the graph sheet
2. Show the formula with diagram $(a+b+c)^2$
3. Construction of square root April
4. An angle subtended by the arc at the centre is double the remaining part of the circle.
5. Prove angle on the same segment are equal to one another.

Assessment:

Complete Given question paper

Complete your portfolio.

Prepare progressions lesson in HW

AUTUMN BREAK HOLIDAY HOMEWORK

CLASS 9 SCIENCE

Chapter - EXPLORING MIXTURES AND THEIR SEPARATIONS

Q 1 - What are methods of separation. Define any three types of separation techniques with one example each.

Q 2 - Differentiate between solution, suspension, colloid with at least 3 points.

Q 3 - Blood is an example of a colloidal mixture.

i - What would happen if blood behaved like a true suspension inside the body?

ii - In a blood sample, identify the dispersed phase and the dispersion medium.

Q 4 - A saturated solution of potassium nitrate is cooled suddenly instead of slowly. Predict the effect on crystal formation. Write at least 3 points.

Q 5 - Why does a beam of sunlight become visible in a dusty room?

Chapter - HOW FORCES AFFECT MOTION

Q 1 - What is force? Write all the effects of force.

Q 2 - Write all three laws of Newton.

Q 3 - A student is trying to push a stationary block of 25kg on a horizontal floor. The maximum force of friction opposing this motion is 50N. Determine the displacement of the block in 2 seconds if that student pushes it with constant force of -

i - 50N

ii - 55N

Both in the forward direction

Q 4 - Differentiate between balanced force and unbalanced force with minimum 3 points each.

Q 5 - A weightlifter is holding a barbell with a mass of 10kg fixed on each side of the bar. The mass of the bar itself is 10kg. How much force is she applying to keep the barbell steady?

Chapter - WORK, ENERGY, AND SIMPLE MACHINE

Q 1 - What is work? What is the SI unit of work? Write the formula of work done.

Q 2 - Write 6 types of energy with 1 example each.

Q 3 - In one of their fastest deliveries, an Indian cricketer bowled a cricket ball with an approximate mass of 0.2kg at a velocity of about 158.8km/h. Calculate the kinetic energy of the ball at the time of its delivery

Q 4 - Differentiate between kinetic energy and potential energy with at least 3 points each.

Q 5 - Write the derivation of potential energy.

Chapter - JOURNEY INSIDE THE ATOM

Q 1 - What is atom? Write all three subatomic particles of an atom.

Q 2 - Write the electronic configuration of these elements -

i - Fluorine

ii - Phosphorus

iii - Aluminium

iv - Calcium

v - Argon

Q 3 - What are valence electrons? How to determine its valency?

Q 4 - Who first discovered proton, neutron, electron?

Q 5 - Rutherford found that a few α -particles bounced back sharply. How does this single surprising result completely rule out Thomson's 'plum pudding model' of the atom?

Autumn Break Holiday Home-work

Class- 9th social science

Chapter 5: State and Society up to 1000 CE –

- **DESCRIPTIVE QUESTIONS (answer these questions)- do on class work copy**

1. What is the difference between Society and State? What are kula, jana and jati?
2. How did political organisation change from kin-based polities of Rigveda (jana/kula in Sapta-Sindhu) to janapadas and then to 16 mahajanapadas? What is the difference between jana and janapada?
3. Name the 16 mahajanapadas. Why was Magadha the most powerful among them?
4. What were ganas / sanghas? How were they different from kingdoms (rajyas)? Give two examples.
5. What were sabha, samiti and vidhata in the Vedic period? How did they control the power of the king (raja)?
6. What were the duties of a king according to Mahabharata Shanti Parva and Arthashastra? Why was protecting people and ensuring justice considered the main duty?
7. What is Kautilya's Saptanga theory of state? Explain the 7 parts of state and what does "one wheel does not move the carriage" mean?
8. What do you mean by pan-Indian awareness of early kings? Explain the terms Jambudvipa, Bharatavarsha, Prithivi, chakravarti kshetra and ashvamedha yajna with examples of Ashoka, Chera king Nedunjeral Adan and Chola Rajendra I?
9. How was the Mauryan Empire administered? What were pradeshikas, rajuka and gramika?
10. How was Gupta administration different from Mauryan? Who were sandhivigrahika, kumaramatyas and what does Damodarpur copper plates tell about 5-member district administration?
11. How did villages work as autonomous units? Explain Pallava Brahmadeya, Chalukya agraharams, and Chola Uttaramerur inscription with Kudavolai (ballot-pot) system and variyam committees.
12. What is the difference between varna and jati? How were new jatis formed? Give examples of social mobility like Nandas, Mauryas, silk-weavers guild of Mandsaur and brahmanas becoming managers.

13. What were the 4 ashramas and 4 purusharthas? How was family (kula) the basic unit of society? What was the role of women from Rigvedic sages (Ghosha, Lopamudra) to Manusmriti quote, Prabhavati Gupta and Sangam poetess Avvaiyar?

14. How did education work in early India? What is gurukula and guru-shishya parampara? Name famous centres like Takshashila, Nalanda, Vallabhi and Vikramshila and subjects taught.

15. How were agriculture, irrigation, trade and guilds important for the economy? Explain Sudarshana Lake (Girnar/Junagadh inscription), Grand Anicut (Kallanai) by Karikala Chola, trade routes Uttarapatha and Dakshinapatha, ports like Muziris and Bharukachchha, and guilds (shreni) as banks as in Nashik cave inscription.

- **MAP POINTING QUESTIONS: Do on separate map and paste on portfolio activity book**

Map 1 - Mahajanapadas: On an outline map of India, locate and label: a) Gandhara and Kamboja in North-West b) Kashi, Kosala, Magadha, Vrijji, Avanti, Matsya c) Chedi, Vatsa, Kuru, Panchala d) Cheras, Cholas, Pandyas in the South.

Map 2 - Empires 300 BCE to 1000 CE: On a map of India, locate: a) Mauryan Empire - Pataliputra b) Satavahanas - Pratishthana c) Guptas d) Pallavas - Kanchipuram e) Chalukyas - Badami f) Gurjara-Pratiharas - Kannauj (centre of tri-partite struggle) g) Palas - Bengal h) Rashtrakutas i) Imperial Cholas - Thanjavur.

Map 3-- Inscriptions, Temples and Learning Centres: On a map, locate: a) Takshashila (now in Pakistan) b) Nalanda, Vikramshila, Vallabhi c) Junagadh/Girnar Rock - Ashoka, Rudradaman I and Skandagupta inscriptions d) Nashik Caves - Ushavadata inscription e) Damodarpur f) Temples: Mahabalipuram, Ellora Kailasa, Thanjavur Brihadeeshwara.

9th class AI Holiday Homework

KENDRIYA VIDYALAYA

AUTUMN BREAK HOLIDAY HOMEWORK – 2026–27

Class: IX Subject: Artificial Intelligence (417)

Syllabus Covered:

- * Part A: First 5 Chapters
- * Part B: First 3 Chapters

General Instructions

- * Complete all the activities neatly in your notebook.
- * Write answers in simple, clear sentences.
- * Give suitable examples wherever necessary.
- * Complete the project work independently.

Part A – Employability Skills

Chapters 1–5

Activity 1: Communication Skills-I

- * Define communication.
- * Differentiate between verbal and non-verbal communication.
- * Write any five barriers to effective communication.
- * Explain the importance of listening skills.
- * Write a short dialogue between a teacher and a student.

Activity 2: Self-Management Skills-I

- * What is self-management?
- * Write five qualities of a self-managed person.
- * Explain the importance of self-confidence.
- * Mention five ways to manage stress.
- * Prepare a daily timetable for your holidays.

Activity 3: ICT Skills-I

- * What you is ICT? Write its full form.
- * Differentiate between hardware and software.
- * Write the full forms of CPU, RAM, ROM and USB.
- * List five uses of computers in daily life.
- * Write five rules for safe computer and internet use.

Activity 4: Entrepreneurial Skills-I

- * Define entrepreneurship.
- * Who is an entrepreneur?
- * Write to five qualities of a successful entrepreneur.
- * Identify five business activities in your locality.
- * Identify three problems in your neighbourhood and suggest a business idea to solve each problem.

Activity 5: Green Skills-I

- * What are of course green skills?
- * Differentiate between renewable and non-renewable resources.
- * Write five ways to conserve water and electricity.
- * Explain the importance of the three Rs: Reduce, Reuse and Recycle.
- * Prepare a poster on “Go Green, Save Earth.”

Part B – Artificial Intelligence

Chapters 1–3

Activity 6: AI Reflection, Project Cycle and Ethics

- * Define Artificial Intelligence (AI).
- * Write five applications of AI in daily life.
- * List the stages of the AI Project Cycle.
- * What is AI ethics? Why is it important?
- * Identify one real-life problem that AI could help solve and explain your idea.

Activity 7: Data Literacy

- * Define data and data literacy.
- * Differentiate between qualitative and quantitative data.
- * Give five examples of data used in everyday life.
- * Explain the importance of data in Artificial Intelligence.
- * Collect data from 10 classmates about their favourite subjects and represent the results using a bar graph.

Activity 8: Math for AI – Statistics and Probability

- * Define mean, median, mode and range.
- * Find the mean, median, mode and range of the following data:
4, 6, 8, 6, 10, 8, 6
- * A die is thrown once. Find the probability of getting an even number.
- * A bag contains 4 red balls and 6 blue balls. Find the probability of selecting a red ball.
- * Explain any three uses of statistics and probability in AI.

Project Work – 10 Marks

Topic: AI and Entrepreneurship in Everyday Life

Prepare a project of 3–5 pages covering the following points:

- * Identify a problem in your school or neighbourhood.
 - * Suggest a business idea to solve the problem.
 - * Explain how AI could help improve your solution.
 - * Identify the data required for your project.
 - * Explain how your idea can benefit society and the environment.
- Include suitable drawings, pictures or a flowchart.

Learning Outcome: Students will develop communication, self-management, ICT, entrepreneurial and green skills, and understand AI, data literacy, statistics and probability through practical activities.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK Homework 2026-27

Subject: ART EDUCATION

Class IX

1. Make a poster on "National Unity Day" in A3 size sheet.
2. Make a painting on Gond Art in A3 size drawing sheet.

PM SHRI KV SRIKAKULAM
AUTUMN BREAK HOME WORK (2026-2027)
(IX CLASS) SUBJECT : TELUGU

1. అక్షరమాల రాయండి. (అ నుంచి ఇ వరకు)
2. గుణింతాల గుర్తులు రాయండి.
3. ఒత్తులు రాయండి.
4. గుణింతాలు రాయండి. (క, చ, ట, త, ప)
5. పదిహేను పండ్ల పేర్లు తెలుగులో రాయండి.
6. పదిహేను జంతువుల పేర్లు తెలుగులో రాయండి.
7. పదిహేను పక్షుల పేర్లు తెలుగులో రాయండి.
8. పదిహేను కూరగాయల పేర్లు తెలుగులో రాయండి.
9. దసరా సెలవులను మీరు ఎలా గడిపారో వివరిస్తూ మీ మిత్రునికి/స్నేహితురాలికి ఒక లేఖ రాయండి.

రాత అభ్యాసం: ప్రతిరోజు 1 పేజీ తెలుగు సులేఖనం (Handwriting) రాయండి.

PM SHRI KENDRIYA VIDYALAYA, SRIKAKULAM

AUTUMN VACATION HOLIDAY HOMEWORK

Class: X-B

Subject: English Language and Literature (184)

Session: 2026–27

General Instructions:

1. Complete all the assignments neatly in your English notebook or in a separate project file, as instructed.
 2. Write answers in your own words.
 3. Follow the prescribed word limits for writing tasks.
 4. Revise all the chapters and grammar topics covered in class.
 5. Submit the completed holiday homework on the first working day after the vacation.
 6. **Write this homework in your Activity Book**
-

Section A: Reading Skills

Q1. Read an age-appropriate newspaper article or an informative passage on any one of the following topics and write a summary in 100–120 words.

- The Impact of Artificial Intelligence on Education
- Environmental Protection and Sustainable Living
- The Importance of Mental Well-being among Students
- Digital Literacy and Cyber Safety

Q2. Unseen Passage Practice

Solve two unseen passages from your English practice book or question bank. Answer all the comprehension questions, including vocabulary, inference, and analytical questions.

Section B: Writing Skills

Q3. Formal Letter Writing

Attempt any TWO of the following in 100–120 words each.

1. Write a letter to the Editor of a newspaper expressing concern about the increasing use of plastic and suggesting measures to reduce plastic waste.
2. Write a letter to the Municipal Commissioner complaining about poor sanitation and overflowing garbage bins in your locality.
3. Write a letter to the Principal requesting the introduction of more career counselling sessions for Class X students.

Q4. Analytical Paragraph Writing

Write an analytical paragraph in 100–120 words on any ONE of the following:

1. Analyse the advantages and disadvantages of online education.
2. Study the following hypothetical data and write an analytical paragraph.

Activity	Percentage of Students
Reading books	25%
Playing sports	30%
Using digital devices	20%
Creative activities	15%
Other activities	10%

Describe the preferences shown in the data, compare the figures, and draw a suitable conclusion.

Q5. Creative Writing

Write a short story in 150–200 words beginning with the following line:

“It was a quiet evening when I noticed a strange envelope lying outside my door...”

Give your story a suitable title and a meaningful ending.

Section C: Grammar

Q6. Complete the following grammar exercises.

A. **Tenses:** Fill in the blanks with the correct form of the verbs.

1. By the time we reached the station, the train _____ (leave).
2. She _____ (prepare) for her examination since morning.
3. If he works hard, he _____ (succeed).
4. The students _____ (complete) their project before the deadline.

B. **Reported Speech:** Change the following into reported speech.

1. The teacher said to the students, “Have you completed your homework?”
2. Riya said to me, “Why are you looking worried?”
3. The coach said to the players, “Practise regularly.”
4. Mother said to me, “Do not waste your time.”

C. **Modals:** Fill in the blanks with suitable modals.

1. We _____ respect our elders.
2. You _____ wear a helmet while riding a two-wheeler.
3. _____ I borrow your dictionary?
4. Students _____ submit their assignments on time.

D. Determiners: Fill in the blanks with suitable determiners.

1. There is _____ milk left in the bottle.
2. _____ student must bring an identity card.
3. I have read _____ books you lent me.
4. There are _____ apples in the basket.

E. Subject–Verb Agreement: Choose the correct verb.

1. Neither the teacher nor the students _____ absent. (was/were)
2. Each of the participants _____ a certificate. (receive/receives)
3. The quality of these products _____ excellent. (is/are)
4. A number of students _____ participated in the competition. (has/have)

Section D: Literature

Q7. Answer the following short-answer questions in 40–50 words each.

1. How does Lencho demonstrate his unwavering faith in God in *A Letter to God*?
2. What message does Nelson Mandela convey about courage in *Nelson Mandela: Long Walk to Freedom*?
3. Why does Anne Frank decide to write a diary in *From the Diary of Anne Frank*?
4. How does the young seagull overcome his fear in *His First Flight*?
5. What does the poem *Dust of Snow* teach us about the power of small moments?
6. How does the poem *Fire and Ice* present the destructive power of human emotions?

Q8. Answer the following long-answer questions in 100–120 words each. Attempt any THREE.

1. How does *A Letter to God* highlight faith, innocence, and irony?
2. Discuss the importance of freedom and responsibility in Mandela's speech.
3. How does the young seagull's experience in *His First Flight* reflect the process of overcoming fear?
4. Compare the attitudes towards life presented in *Dust of Snow* and *Fire and Ice*.
5. How does *The Thief's Story* explore the themes of trust, kindness, and transformation?

•Prepare your Portfolio and submit it after autumn break vacation

Autumn break homework

Subject English

CLASS X-A

1. Take printouts of previous board exam papers and solve all the questions of all the three sets.
2. Write the character sketch of the central characters of all the completed prose lessons with their characteristic features
3. **Art integrated project:** Create a comic strip depicting the conversation between Amanda and her mother and also about the imaginative world of Amanda
4. Prepare a portfolio with all the details like your academic record, strengths/weaknesses, hobbies, likes/dislikes, ambition etc

पीएम श्री केंद्रीय विद्यालय

शरदकालीन अवकाश गृहकार्य

कक्षा – दसवीं । विषय – हिंदी

पाठ्यपुस्तक – क्षितिज । अवधि – 10 दिन

1. पाठ्यपुस्तक (क्षितिज) : पढ़ाए गए किसी दो गद्य-पाठों एवं दो काव्य-पाठों के सारांश अथवा केंद्रीय भाव अपने शब्दों में लिखिए।
2. व्याकरण: संज्ञा, सर्वनाम, विशेषण, क्रिया एवं क्रियाविशेषण की परिभाषाएँ उदाहरण सहित लिखिए।
3. पद-परिचय: निम्नलिखित वाक्यों में रेखांकित पदों का पद-परिचय कीजिए।
 - मोहन विद्यालय जाता है।
 - सीता सुंदर चित्र बनाती है।
 - बच्चे मैदान में खेलते हैं।
 - वह धीरे-धीरे चलता है।
4. विज्ञापन लेखन: जल संरक्षण अथवा पर्यावरण संरक्षण विषय पर एक आकर्षक विज्ञापन A4 शीट पर तैयार कीजिए।
5. रचनात्मक लेखन: विद्यालय में आयोजित होने वाले पुस्तक मेले के लिए लगभग 40-50 शब्दों में एक आकर्षक विज्ञापन तैयार कीजिए।

CLASS X - SANSKRIT

शरत् कालीन अवकाश गृह कार्यं संस्कृत

दशमी -

1. गत त्रि वर्षीय प्रश्नोत्तराणी अन्य पुस्तिका मध्ये लिखत।
2. संस्कृत निवेश सूची लिखत।
3. अस्मद् युष्मद्, किम् शब्द रूपाणि अर्थ सहितं लिखत।

PM SHRI KV SRIKAKULAM
AUTUMN BREAK HOLIDAY HOMEWORK
Mathematics | Class 10

Kendriya Vidyalaya - Session 2026-27

Autumn Break: 15 October 2026 to 24 October 2026 (10 days)

Revision of chapters completed before the break (as per the Split-Up Syllabus)

Chapters Covered (for revision)

- Ch 1 - Real Numbers
- Ch 2 - Polynomials
- Ch 3 - Pair of Linear Equations in Two Variables
- Ch 4 - Quadratic Equations
- Ch 5 - Arithmetic Progressions
- Ch 6 - Triangles
- Ch 7 - Coordinate Geometry
- Ch 8 - Introduction to Trigonometry
- Ch 9 - Applications of Trigonometry
- Ch 10 - Circles
- Ch 11 - Areas Related to Circles
- Ch 12 - Surface Areas and Volumes

Instructions for Students

1. Attempt one worksheet each day. Do all the work neatly in your Maths notebook.
2. Write the question number and then the complete solution, showing each step.
3. Draw diagrams and graphs with a pencil and ruler wherever needed.
4. Revise the chapter from the textbook before starting that day's worksheet.
5. This is revision work only, based on what has already been taught in class.

Day 1: Real Numbers and Polynomials

1. Find the HCF and the LCM of 26 and 91, and verify that $\text{HCF} \times \text{LCM} = \text{product of the numbers}$.
2. Prove that the square root of 5 is irrational.
3. Find the zeroes of $x^2 - 5x + 6$.
4. Find a quadratic polynomial whose zeroes are 3 and -2.
5. If the product of the zeroes of $x^2 - 7x + k$ is 12, find k.
6. Without dividing, state whether $13/125$ has a terminating or a non-terminating decimal expansion.
7. Find the HCF of 96 and 404 by prime factorisation.
8. Find the zeroes of $x^2 - 4$.

Day 2: Pair of Linear Equations in Two Variables

1. Solve: $x + y = 10$ and $x - y = 2$.
2. Solve by substitution: $2x + 3y = 12$, given $x = 3$.
3. For what value of k do $2x + 3y = 7$ and $4x + 6y = k$ have infinitely many solutions?

4. Solve: $3x + 2y = 12$ and $5x - 2y = 4$.
5. Check the consistency of: $x + 2y = 5$ and $3x + 6y = 15$.
6. The sum of two numbers is 35 and their difference is 13. Find the numbers.
7. Solve: $7x + 6y = 3800$ and $3x + 5y = 1750$.
8. Five years ago a father was three times as old as his son. Write a linear equation for this situation.

Day 3: Quadratic Equations

1. Solve by factorisation: $x^2 - 7x + 12 = 0$.
2. Solve using the quadratic formula: $x^2 - 5x + 6 = 0$.
3. Find the nature of the roots of $2x^2 - 4x + 3 = 0$.
4. Find k if $x^2 + kx + 9 = 0$ has equal roots.
5. Solve: $x^2 - 9 = 0$.
6. The product of two consecutive positive integers is 306. Find the integers.
7. Solve: $2x^2 + x - 6 = 0$.
8. Find the roots of $x^2 + 4x + 4 = 0$.

Day 4: Arithmetic Progressions

1. Find the 10th term of the AP 2, 7, 12, ...
2. Find the sum of the first 20 terms of the AP 3, 7, 11, ...
3. Which term of the AP 5, 8, 11, ... is 50?
4. Find the common difference of the AP $\frac{1}{2}$, 1, $\frac{3}{2}$, ...
5. Find the sum of the first 15 multiples of 8.
6. The 5th term of an AP is 19 and the 10th term is 39. Find the AP.
7. How many two-digit numbers are divisible by 3?
8. Find the 21st term of the AP -4, -1, 2, ...

Day 5: Triangles

1. State the Basic Proportionality Theorem (Thales theorem).
2. In triangle ABC, DE is parallel to BC, AD = 3 cm, DB = 5 cm and AE = 4.5 cm. Find EC.
3. Two triangles are similar and their corresponding sides are in the ratio 2 : 3. Find the ratio of their areas.
4. Check whether triangles with sides 3, 4, 5 and 6, 8, 10 are similar.
5. In two triangles ABC and DEF, angle A = angle D and angle B = angle E. Name the similarity criterion.
6. The areas of two similar triangles are 81 cm^2 and 49 cm^2 . Find the ratio of their corresponding sides.
7. State the Pythagoras theorem.
8. A vertical pole 6 m high casts a shadow 4 m long. Find the height of a tree that casts a shadow 10 m long at the same time.

Day 6: Coordinate Geometry

1. Find the distance between the points (2, 3) and (5, 7).
2. Find the midpoint of the line segment joining (4, -2) and (-2, 6).
3. Find the distance of the point (-3, 4) from the origin.

4. Find the coordinates of the midpoint of the segment joining (2, 3) and (6, 7).
5. Using the section formula, find the point dividing the segment joining (4, -3) and (8, 5) in the ratio 3 : 1.
6. Find the side lengths to show that (1, 7), (4, 2), (-1, -1) and (-4, 4) form a square.
7. Find the distance between (a, 0) and (0, b).
8. Find the point on the x-axis that is equidistant from (2, -5) and (-2, 9).

Day 7: Trigonometry and Its Applications

1. If $\sin(\theta) = \frac{3}{5}$, find $\cos(\theta)$ and $\tan(\theta)$.
2. Evaluate: $\sin 30^\circ + \cos 60^\circ$.
3. Evaluate: $2 \tan^2(45^\circ) + \cos^2(30^\circ) - \sin^2(60^\circ)$.
4. If $\tan(\theta) = 1$, find θ .
5. Prove: $\sin^2(\theta) + \cos^2(\theta) = 1$.
6. A tower casts a shadow 30 m long when the sun's elevation is 45 degrees. Find the height of the tower.
7. The angle of elevation of the top of a building from a point 20 m away is 60 degrees. Find the height of the building.
8. Evaluate: $\sin 45^\circ / \cos 45^\circ$.

Day 8: Circles and Areas Related to Circles

1. Complete: the tangent at any point of a circle is perpendicular to the ____.
2. The two tangents drawn from an external point to a circle are ____ in length.
3. Find the length of the tangent from a point 10 cm from the centre of a circle of radius 6 cm.
4. Find the area of a sector of angle 90 degrees in a circle of radius 14 cm.
5. Find the length of an arc of a circle of radius 21 cm subtending an angle of 60 degrees at the centre.
6. Find the area of a circle of radius 7 cm.
7. The circumference of a circle is 44 cm. Find its radius.
8. Find the area of a quadrant of a circle of radius 14 cm.

Day 9: Surface Areas and Volumes

1. Find the volume of a sphere of radius 7 cm.
2. Find the total surface area of a cube of side 5 cm.
3. A cylinder has radius 7 cm and height 10 cm. Find its volume.
4. Find the curved surface area of a cone of radius 7 cm and slant height 10 cm.
5. Find the volume of a hemisphere of radius 3.5 cm.
6. Find the volume of a cuboid of dimensions 10 cm x 5 cm x 4 cm.
7. The surface area of a sphere is 154 cm^2 . Find its radius.
8. A cone and a cylinder have the same radius and height. Find the ratio of their volumes.

Day 10: Mixed Revision

1. Find the HCF and the LCM of 12, 15 and 21.
2. Find the zeroes of $x^2 + 7x + 10$.
3. Solve: $2x + y = 8$ and $x - y = 1$.

4. Find the 15th term of the AP 7, 11, 15, ...
 5. Find the distance between (-5, 7) and (-1, 3).
 6. Evaluate: $\sin 60 \cos 30 + \cos 60 \sin 30$.
 7. Find the area of a circle of diameter 28 cm.
 8. Find the volume of a cube of edge 6
-

Autumn Break Holiday Home-work

Class- 10th social science

Chapter – Print culture and the modern world

- Read the whole chapter and Make 50 mcqs from this chapter.
- Practice case study from this chapter
- Map practice from chapters- Do on separate map and paste on portfolio activity book
 - resources and development
 - water resources
 - agriculture
 - minerals and energy resources
 - manufacturing industries
 - life lines of Indian economy
 - nationalism in India

IMPORTANT CONGRESS SESSION

1. CONGRESS SESSION IN 1916- **LACKNOW**
2. FIRST INDEPENDENCE DAY CELEBRATED IN CONGRESS SESSION 1929- **LAHORE**
3. CONGRESS SESSION HELD IN DEC 1920- **NAGPUR**
4. CONGRESS SESSION HELD IN SEP 1920- **CULCUTTA**
5. FIRST SESSION OF CONGRESS HELD IN 1885- **BOMBAY**
6. IN 1927 CONGRESS SESSION WAS HELD IN- **MADRAS**

IMPORTANT CENTRE OF INDIAN NATIONAL MOVEMENT

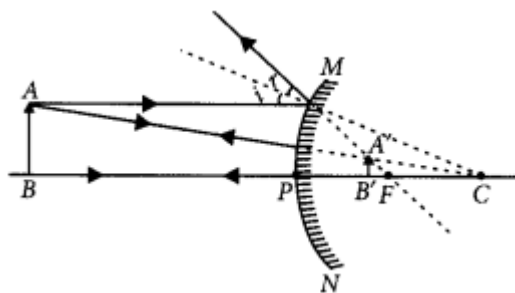
- ❑ CALLING OF NON- COOPERATION MOVEMENT IN 1922- **CHAURI CHAURA (UP)**
- ❑ MOVEMENT OF INDIGO PLANTERS OR FIRST SATYAGRAHA OF MAHATMA GANDHI- **CHAMPARAN (BIHAR)**
- ❑ COTTON MILL WORKER SATYAGRAHA- **AHMADABAD (GUJARAT)**
- ❑ PEASANT SATYAGRAHA – **KHEDA (GUJARAT)**
- ❑ SATYAGRAHA LEADED BY SARDAR PATEL IN 1928- **BARDOLI(GUJARAT)**
- ❑ CIVIL DISOBEDIENCE MOVEMENT OR MAHATMA GANDHI BROKE THE SALT LAW- **DANDI (GUJARAT)**
- ❑ JALLIAN WALA BAGH INCIDENT- **AMRITSAR (PUNJAB)**

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

HOLIDAY HOME WORK (AUTUMN BREAK) CLASS:10 SCIENCE

1) If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a labelled ray diagram to support your answer.

A) If the image formed by a spherical mirror is always erect and diminished then it is convex mirror.



2) List two possible ways in which a concave mirror can produce a magnified image of an object placed in front of it. State the difference if any between these two images. (AI2014)

Answer:

A concave mirror can produce a magnified image of an object when object is placed:

- (1) In between its pole and its focus
- (2) In between its focus and its centre of curvature.

Difference between these two images:

The image produced in first case will be virtual and erect.

The image produced in second case will be real and inverted.

3) State the role played by the following in the process of digestion :

(i) Enzyme trypsin

(ii) Enzyme lipase-

(b) List two functions of finger-like projections present in the small intestine. (2020)

Answer:

(a) (i) Enzyme trypsin : This enzyme is produced by the pancreas in an inactive form called trypsinogen. Trypsin converts remaining proteins into peptones and the peptones into peptides and amino acids.

(ii) Enzyme lipase : It is secreted by pancreas and small intestine. Lipase converts fats into fatty acids and glycerol.

(b) Internally, the wall of the small intestine is provided with long finger-like projections called villi. Two functions of villi are :

(i) The villi greatly increase the absorptive surface area of the inner lining of small intestine.

(ii) The large surface area of small intestine helps in rapid absorption of digested food.

4) a) What is peristaltic movement?

(b) 'Stomata remain closed in desert plants during daytime'. How do they do photosynthesis?

Answer:

(a) The relaxation of gut muscles to move the partially digested food downwards throughout

the alimentary canal is called peristaltic movement.

(b) In desert plants, stomata open at night and take in carbon dioxide (CO₂). Stomata remain closed during daytime to prevent the loss of water by transpiration. They store the CO₂ in their cells until the sun comes out so that they can carry on with photosynthesis during the daytime.

5)) What will happen if mucus is not secreted by the gastric glands?

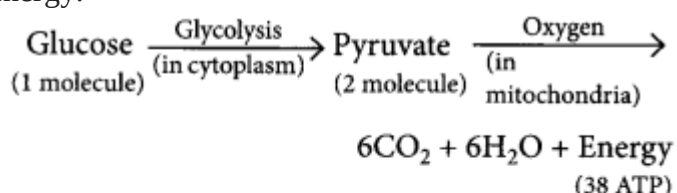
A) Gastric glands secrete HCl, mucus, rennin and pepsin enzymes. Mucus protects the inner lining of stomach from the action of HCl and enzymes. In the absence of mucus, there would be erosion of inner lining of stomach leading to acidity and ulcers

6) Write two different ways in which glucose is oxidised to provide energy in human body. Write the products formed in each case.

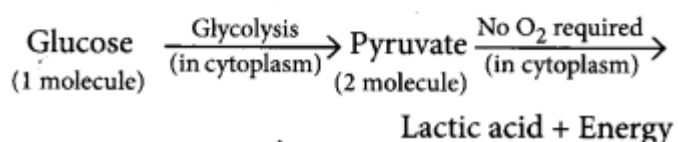
Answer:

The two different ways by which glucose is oxidised to provide energy in human body are:

(i) Aerobic respiration : The end products in aerobic respiration are carbon dioxide, water and energy.



(ii) Anaerobic respiration : The end products are lactic acid and energy.



7) **What are the advantages of vegetative propagation?:** This technique is useful for the propagation of those plants that are seedless or do not produce viable seeds.

- For fruit trees and flowering bushes, grafting is a propagation method.
- We can obtain seedless plants by method of artificial vegetative propagation.
- Grafting enables the combination of the most desirable characteristics of two plants.
- Through stem cutting, certain plants, like roses, sugarcane, cacti, etc., can be propagated rapidly.
- Bananas and jasmine are the two plants grown through the vegetative propagation method.
- The new plant produced by vegetative propagation is similar to the parent plant, and the desired feature will be replicated in the new plants.
- Vegetative reproduction can propagate the orange plant that has lost the ability to produce seeds.
-

8) **What are the three contraception methods that can help control the human population?**

- **A) Physical method:** devices such as condoms, diaphragms, and cervical caps are used.
- **Chemical method:** This method involves tablets or drugs which have to be taken orally. These contain small doses of hormones that prevent the discharge of eggs and thus fertilization cannot occur.
- **IUCD (Intra uterine contraceptive devices) :** Contraceptive devices such as loop or Copper-T are placed within the uterus to prevent pregnancy.
- **Surgical method:** the fallopian tubes are blocked in females to stop the flow of eggs, and vas deferens are blocked in men to stop the flow of sperm.

9) Offspring's formed as a result of sexual reproduction produce more variations. Give reason.

A) They inherit genetic material from two parents, resulting in a mix of traits not present in either parent. This mixing of genetic information increases variation.

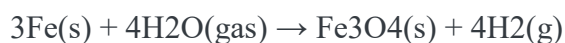
10)) An element 'X' replaces iron from the aqueous solution of iron sulphate. List your observations when the element 'X' is treated with the aqueous solutions of copper sulphate, zinc sulphate and silver nitrate solution. Depending on the statements, arrange X, Zn, Cu and Ag in increasing order of their reactivities.

11) : Write equations for the reactions of

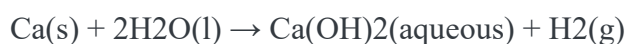
(i) iron with steam

(ii) calcium and potassium with water

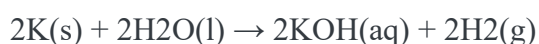
A: (i) Iron reacts with steam to form a magnetic oxide of Fe with the liberation of H₂ gas.



(ii) As Calcium metal interacts with water to form calcium hydroxide and hydrogen gas.



Potassium interacts with cold water violently with the evolution of H₂ gas, which catches fire. .



12) : Define the following terms :

(i) Minerals

(ii) Ores and

(iii) Gangue

(i) Minerals: The elements or compounds occurring naturally in the earth's crust are minerals.

(ii) Ores: Minerals from which metal can be extracted profitably and easily are called ores.

(iii) Gangue: Impurities such as soil and sand, which are present in the minerals, are called gangue.

13) Why does a myopic person remove spectacles while reading and a hypermetropic person remove spectacles while looking at the sky?

A) Spectacles are not required by a myopic person while reading the book, as the near point is 25cm. If the person reads the book with the concave lens, the book needs to be kept at a distance greater than 25 cm. so the concave lens forms the image at 25 cm, and the size of the book also appears smaller than the actual size. So the person will prefer to read the book without spectacles.

The hypermetropic person does not need spectacles to see the distant object as the far point is at infinity. If the person uses a convex lens to see the object at a distance, the image is formed before the retina due to the increase in the converging power, and the person will not be able to see the distant object. So the person prefers to remove the spectacles to look at the sky

14) . Answer the following questions:

- 1. Which eye part has the delicate membrane, and what type of light-sensitive cells are present?**
 - 2. Why is a person advised to wear a convex lens?**
 - 3. What happens to the pupil in dim light and bright light?**
 - 4. Name the defect of vision when the power of the eye is too long.**
 - 5. Name the defect of the vision when the focal length of the eye lens is too long**
-
1. Retina is a delicate membrane, and it contains a large number of photosensitive cells, which are called the rods and the cones.
 2. A person is suffering from hypermetropia.
 3. The size of the pupil increases in dim light and decreases in bright light.
 4. The vision defect is short-sightedness.
 5. The vision defect is long-sightedness.

15) Write the chemical equations for the following reactions of:

(a) Ethanol with sodium

(b) Ethanol with alkaline KMnO_4

(c) Ethanoic acid with sodium carbonate

(d) Ethanoic acid with ethanol

(e) Hydrogenation of vegetable oils

.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK HOLIDAY HOMEWORK – 2026

Class: X Subject: Artificial Intelligence (AI – 843)

Q1. Employability Skills

Explain the seven Cs of effective communication, any three stress-management techniques, and the importance of sustainable development.

Q2. Introduction to AI

Define Artificial Intelligence. Explain the three domains of AI — Data Science, Computer Vision and Natural Language Processing (NLP) — with suitable examples.

Q3. AI Project Cycle

Explain the five stages of the AI Project Cycle with an example of an AI-based solution to a real-life problem.

Q4. Data Science

Differentiate between structured and unstructured data. Explain any three methods of data visualisation and their uses.

Q5. Computer Vision

What is Computer Vision? Differentiate between image classification, object detection and image segmentation with examples.

Q6. Natural Language Processing

Define NLP and explain any four real-life applications of NLP. Also explain tokenisation and sentiment analysis with examples.

Q7. Evaluation and Neural Networks

- a) Explain the importance of evaluating an AI model.
- b) Define accuracy, precision and recall.
- c) Explain the basic structure of an artificial neural network.

Q8. AI Ethics and Practical Applications

What are AI bias, data privacy and ethical AI? Explain how AI can be used responsibly in education, healthcare and environmental protection.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK Homework 2026-27

Subject: ART EDUCATION

Class X

1. Make a painting/drawing on the theme of “ Viksit Bharat—A Vision for Bharat in the year 2047 ”. (A3/A4 Size Sheet).
2. Make a Madhubani Painting in A4 size sheet.

Autumn break homework

Subject: English

CLASS XI

1. Collect classified Ads from newspapers and magazines and paste them on a chart(black) paper under different heads(Titles)
2. Draft/design 5 posters on Vanamahotsav day, Save water for future, Say no to Drugs, and Wildlife conservation
3. Write an article/poem on your own and submit them for the class magazine
4. **Project work:** King Tutankhamun: History through the lens of science (Interdisciplinary project(History+ literature + science))

पीएम श्री केन्द्रीय विद्यालय श्रीकाकुलम

कक्षा – 11

शरद ऋतु अवकाश गृह कार्य (2026-27)

निम्नलिखित प्रश्नों के उत्तर अपनी उत्तर पुस्तिका में लिखिए –

1. 'नमक का दारोगा' कहानी में पंडित अलोपीदीन के व्यक्तित्व के कौन से दो पहलू (पक्ष) उभरकर आते हैं ?
2. मियां नसीरुद्दीन को नानबाइयों का मसीहा क्यों कहा गया है ?
3. किसी फिल्म की शूटिंग करते समय फिल्मकार को किन – किन समस्याओं का सामना करना पड़ता है ?
4. आठ करोड़ प्रजा की गिड़गिड़ाकर विच्छेद न करने की प्रार्थना पर आपने जरा भी ध्यान नहीं दिया – यहाँ किस ऐतिहासिक घटना की ओर संकेत किया गया है ?
5. मास्टर त्रिलोक सिंह के किस कथन को लेखक ने जबान के चाबुक कहा है और क्यों ?
6. कबीर की दृष्टि में ईश्वर एक है। इसके समर्थन में उन्होंने क्या तर्क दिए हैं ?
7. कबीर ने स्वयं को दीवाना क्यों कहा है ?
8. मीरा कृष्ण की उपासना किस रूप में करती हैं ? वह रूप कैसा है ?
9. मायके आई बहन के लिए कवि ने घर को 'परिताप का घर' क्यों कहा है ?
10. चंपा ने ऐसा क्यों कहा कि 'कलकत्ता पर बजर गिरे'। 'चंपा काले – काले अच्छर नहीं चीन्हती' कविता के आधार पर बताइए।
11. आपके द्वारा विद्यालय में प्रथम बार दिए गए भाषण के अनुभव को डायरी में लिखिए।
12. किसी विद्यालय में हिंदी शिक्षक के पद पर नियुक्ति हेतु स्ववृत्त लिखिए।
13. जनसंचार माध्यमों से आप क्या समझते हैं ? प्रमुख जन संचार माध्यम कौनसे हैं ?
14. आप पवन / पावनी हैं। आपके मोहल्ले में गन्दगी के कारण मच्छरों की अधिकता है जिसके कारण डेंगू फैल रहा है। दिल्ली नगर निगम के अधिकारी को इसके बारे में बताते हुए सफाई हेतु अनुरोध पत्र लिखिए।
15. राजस्थान में रेगिस्तानी खेत में पानी के कितने रूप हैं ? उनके प्रकारों के बारे में लिखिए।
16. लेखक ने लता की गायकी की किन विशेषताओं को उजागर किया है ? आपको लता की गायकी में कौन-सी विशेषताएं नजर आती हैं ? उदहारण सहित लिखिए।

*** निम्नलिखित में से किसी एक विषय (Any one Topic) पर 'परियोजना कार्य' (Project work) कीजिए :- (प्रोजेक्ट फाइल अलग से बनाइए)**

1. किसानों की वर्तमान स्थिति
2. शहरों की ओर पलायन
3. महिला शिक्षा की अनिवार्यता
4. कन्नड़ की मीरा ;अक्क महादेवी
5. प्रेमचंद की कहानियाँ और लोक जीवन
6. भ्रष्टाचार एक सामाजिक बुराई
7. वर्तमान में अखबारों की भूमिका
8. विज्ञापन की आकर्षक दुनिया
9. प्रसिद्ध यात्रा वृत्तांत
10. तकनीकी शिक्षा का महत्व
11. मेरे सपनों का भारत
12. सुर साम्राज्ञी लता मंगेशकर की लोकप्रियता
13. विद्यार्थी जीवन में बढ़ते तनाव और उससे मुक्त होने के उपाय
14. सोशल मीडिया और आज का युवा
15. हिन्दी के विकास में सिनेमा का योगदान
16. जनसंचार का महत्व
17. हिंदी और इन्टरनेट
18. कबीर के मूल्यों का आज के समय में महत्व
19. हिन्दी मीडिया के चर्चित चेहरे
20. हिंदी के किसी प्रसिद्ध रचनाकार का जीवन वृत्तांत एवं रचनाएं

PMSHRI KV SRIKAKULAM
AUTUMN BREAK HOLIDAY HOMEWORK
Mathematics | Class 11

Kendriya Vidyalaya - Session 2026-27

Autumn Break: 15 October 2026 to 24 October 2026 (10 days)

Revision of chapters completed before the break (as per the Split-Up Syllabus)

Chapters Covered (for revision)

- Ch 1 - Sets
- Ch 2 - Relations and Functions
- Ch 3 - Trigonometric Functions
- Ch 4 - Complex Numbers
- Ch 5 - Linear Inequalities
- Ch 6 - Permutations and Combinations
- Ch 7 - Binomial Theorem
- Ch 8 - Sequences and Series

Instructions for Students

1. Attempt one worksheet each day. Do all the work neatly in your Maths notebook.
2. Write the question number and then the complete solution, showing each step.
3. Draw diagrams and graphs with a pencil and ruler wherever needed.
4. Revise the chapter from the textbook before starting that day's worksheet.
5. This is revision work only, based on what has already been taught in class.

Day 1: Sets

1. Write the set of vowels in the English alphabet in roster form.
2. If $A = \{1, 2, 3, 4\}$ and $B = \{3, 4, 5, 6\}$, find $A \cup B$ and $A \cap B$.
3. Write in set-builder form: $\{2, 4, 6, 8\}$.
4. If $n(A) = 20$, $n(B) = 15$ and $n(A \cap B) = 5$, find $n(A \cup B)$.
5. Write the power set of $\{a, b\}$.
6. If $A = \{x : x \text{ is a prime number less than } 10\}$, write A in roster form.
7. For $A = \{1, 2, 3\}$ and $B = \{3, 4\}$, find $A - B$ and $B - A$.
8. In a class of 40 students, 25 play football and 20 play cricket, and 10 play both. How many play neither?

Day 2: Relations and Functions

1. If $A = \{1, 2\}$ and $B = \{3, 4\}$, find $A \times B$.
2. Define a function and give one example.
3. Find the domain of $f(x) = 1/(x - 2)$.
4. If $f(x) = 2x + 3$, find $f(2)$ and $f(0)$.
5. Find the range of $f(x) = x^2$.
6. If $f(x) = x^2$ and $g(x) = x + 1$, find $(f + g)(x)$.
7. Find the domain of $f(x) = \sqrt{x - 3}$.

8. For $R = \{(1, 2), (2, 3), (3, 4)\}$, write the domain and the range.

Day 3: Trigonometric Functions

1. Convert 60 degrees into radians.
2. Convert $\pi/4$ radians into degrees.
3. Find the value of $\sin 150$ degrees.
4. Find the value of $\cos(-60$ degrees).
5. Prove that $\sin(\pi + x) = -\sin x$.
6. If $\sin x = 1/2$, find the general solution for x .
7. Find the value of $\tan(3\pi/4)$.
8. Find the maximum and the minimum value of $3 + 2 \sin x$.

Day 4: Complex Numbers

1. Express $(3 + 2i) + (1 - 5i)$ in the form $a + bi$.
2. Find the modulus of $3 + 4i$.
3. Find the conjugate of $2 - 3i$.
4. Multiply: $(2 + i)(3 - 2i)$.
5. Find the value of i^{15} .
6. Express $1/(1 + i)$ in the form $a + bi$.
7. Find the multiplicative inverse of i .
8. Solve: $x^2 + 4 = 0$.

Day 5: Linear Inequalities

1. Solve: $3x - 5 < 7$.
2. Solve $5x + 3 \leq 18$ and represent the solution on a number line.
3. Solve: $-3 < 2x + 1 \leq 5$.
4. Solve: $2(2x + 3) - 10 < 6(x - 2)$.
5. Solve: $x/2 + 1 \geq 3$.
6. Solve: $7 \leq (3x - 11)/2 \leq 11$.
7. Solve for x : $-5 \leq (5 - 3x)/2 \leq 8$.
8. Solve $3x + 8 > 2$, where x is a natural number.

Day 6: Permutations and Combinations

1. Evaluate $5!$.
2. Evaluate ${}^7P_3$.
3. Evaluate ${}^8C_3$.
4. In how many ways can 5 different books be arranged on a shelf?
5. How many 3-digit numbers can be formed from the digits 1, 2, 3 and 4 without repetition?
6. In how many ways can a committee of 3 be chosen from 7 people?
7. How many diagonals does a hexagon have?
8. In how many ways can 6 people be seated around a round table?

Day 7: Binomial Theorem

1. Expand $(x + 2)^3$.
2. Expand $(1 + x)^4$.
3. Write the general term in the expansion of $(a + b)^n$.
4. Find the coefficient of x^2 in the expansion of $(1 + x)^5$.
5. Find the middle term in the expansion of $(x + 1/x)^{10}$.
6. Expand $(2x - 3)^3$.
7. Find the coefficient of x^5 in the expansion of $(x + 3)^6$.
8. Find the number of terms in the expansion of $(a + b)^{10}$.

Day 8: Sequences and Series (Part 1)

1. Find the 8th term of the GP 2, 6, 18, ...
2. Find the sum of the first 10 terms of the AP 3, 7, 11, ...
3. Find the sum to n terms of the GP $1 + 2 + 4 + \dots$
4. Find the 5th term of the GP 3, -6, 12, ...
5. Find the sum of the first 20 natural numbers.
6. Find the sum of the infinite GP: $1 + 1/2 + 1/4 + \dots$
7. Find the sum: $1 + 3 + 5 + \dots + 49$.
8. If the 3rd term of a GP is 24 and the 6th term is 192, find the GP.

Day 9: Sequences and Series (Part 2)

1. Find the sum of the series $5 + 8 + 11 + \dots + 50$.
2. Find the sum of the squares of the first 10 natural numbers.
3. Find the 12th term of the GP $1, 1/2, 1/4, \dots$
4. Insert three geometric means between 2 and 32.
5. Find the sum: $1/2 + 1/4 + 1/8 + \dots$
6. If a , b and c are in AP, show that $2b = a + c$.
7. Find the sum of the first n odd numbers.
8. Find the sum of the first 15 terms of the AP 10, 7, 4, ...

Day 10: Mixed Revision

1. If $A = \{1, 2, 3\}$ and $B = \{2, 3, 4\}$, find $A \cap B$ and $A \cup B$.
2. Find the domain of $f(x) = 1/(x^2 - 9)$.
3. Find the value of $\cos 120^\circ$.
4. Find the modulus of $1 + i$.
5. Solve: $4x + 3 < 11$.
6. Evaluate $6C2$.
7. Expand $(x - 1)^3$.
8. Find the sum of the first 12 terms of the AP 2, 5, 8,

XI - PHYSICS

1. Derive Dimensional formula of G .
2. Using Dimensional Analysis derive Relation between Energy, mass and velocity.
3. Using Dimensional Analysis, obtain Relation for Time period of Simple Pendulum. What are the limitations of dimensional analysis?
4. Derive equations of uniformly accelerated motion using velocity - time graph.
5. Draw and explain Position-time graph, velocity-time graph and acceleration-time graph of uniformly accelerated motion.
6. Explain motion under gravity. Derive expressions for equation of a body falling freely from rest.
7. Derive expressions for magnitude and direction of Resultant vector in terms of magnitude & angle of two vectors **P** and **Q**. (Law of Sines & cosines).
8. Explain projectile motion using diagram & its parabolic path.
Derive expressions for a) Parabolic path b) Time of flight c) max. Height d) Range
9. What is circular motion? Explain centripetal acceleration and centripetal force. Derive expressions for
a) Centripetal acceleration b) Centripetal force c) Speed
10. State and explain Newton's second law of motion. Derive expression for force using this Law. Give Dimensions and units of momentum and force.
11. Derive expression for maximum velocity of a car moving on
a) Level circular Road b) Banked Road
12. Explain conservation of Linear momentum. Derive it using Newton's Laws.
13. A block is placed on an inclined plane. Draw the free body diagram and derive expression for its acceleration.
14. What is friction? Explain various kinds of friction using suitable expressions.
15. Explain the laws of conservation of Mechanical Energy. Show how energy is conserved in a free falling body. Prove that final velocity of the object is independent of mass.
16. Explain the laws of conservation of mechanical Energy. Show how energy is conserved while stretching a spring. Prove that final velocity of the spring is independent of mass.
17. State and explain Hooke's Law for Spring force. Using x - t curve derive expression for Spring force and potential energy.
18. Derive expression for work done by a) constant force b) variable force. Give dimensions & units of work.
19. Differentiate between elastic and inelastic collision. Derive expressions for final velocities of 2 bodies in terms of their masses & initial velocity having elastic collision in one dimension.
20. Explain Centre of mass & Centre of Gravity. Give expressions for finding CM for system of n -particles in 3-dimensions.
21. Explain Rotational motion with diagram. Give the equations of rotational motion.
22. State and explain law of conservation of angular momentum using suitable examples.
23. Explain Angular momentum with suitable expressions. Show that rate of change of angular momentum is equal to the Torque acting on the body.
24. State and explain Kepler's second law of planetary motion. Show how angular momentum is conserved in such motion.
25. State Kepler's third law of planetary motion. Derive Kepler's 3rd law from universal law of gravitation & Newton's laws of motion.
26. Derive expression for acceleration due to gravity (g) - a) at the surface of earth b) at height ' h ' c) at depth ' d '
27. State universal law of Gravitation. Derive expression for Gravitational Potential Energy?
28. What is escape velocity? Derive expression for it.
29. Discuss motion of satellite. Derive expressions its time period & energy stored in Satellite.



AUTUMN BREAK HOME WORK

Chemistry

Class : XI

-
1. An organometallic compound on analysis was found to contain, C = 64.4%, H = 5.5% and Fe = 29.9%. Determine its empirical formula (At. mass of Fe = 56 u). 2
 2. Calculate the number of protons, neutrons and electrons in $^{80}_{35}\text{Br}$. 2
 3. Among the second period elements, the actual ionization enthalpies are in the order $\text{Li} < \text{B} < \text{Be} < \text{C} < \text{O} < \text{N} < \text{F} < \text{Ne}$.
Explain, why
(i) Be has higher $\Delta_i H$ than B?
(ii) O has lower $\Delta_i H$ than N and F? 2
 4. Which of the following pairs of elements would have a more negative electron gain enthalpy?
(i) O or F (ii) F or Cl 2
 5. Draw molecular orbital energy level diagram for N_2^+ . Calculate its bond order and explain its magnetic characteristics. 2
 6. Define octet rule. Write its significance and limitations. 2
 7. Define hybridization. Explain the structure of C_2H_2 with orbital diagram. 2
 8. A welding fuel gas contains carbon and hydrogen only. Burning a small sample of it in oxygen gives 3.38 g of carbon dioxide, 0.690 g of water and no other products. A volume of 10 L (measured at STP) of this welding gas is found to weigh 11.6 g. Calculate (i) empirical formula, (ii) molar mass of the gas and (iii) molecular formula. (At. wt. of C = 12, H = 1, O = 16 u). 3
 9. 50.0 kg of $\text{N}_2(\text{g})$ and 10.0 kg of $\text{H}_2(\text{g})$ are mixed to produce $\text{NH}_3(\text{g})$. Calculate the $\text{NH}_3(\text{g})$ formed. Identify the limiting reagent in the production of NH_3 in this situation. 3
 10. The reactant which is entirely consumed in reaction is known as limiting reagent. In the reaction $2\text{A} + 4\text{B} \rightarrow 3\text{C} + 4\text{D}$, when 5 moles of A react with 6 moles of B, then
(i) which is the limiting reagent?
(ii) calculate the amount of C formed. 3

11. (i) State Pauli's exclusion principle. 3
 (ii) Account for the following:
 (a) Chromium has configuration $3d^5 4s^1$ and not $3d^4 4s^2$.
 (b) Bohr's orbits are called stationary orbits or states.

12. What are the frequency and wavelength of a photon during a transition from $n = 5$ state to $n = 2$ state in the He^+ ion. 3

13. Yellow light emitted from a sodium lamp has a wavelength (λ) of 580 nm. Calculate the frequency (ν) and wave number ($\bar{\nu}$) of the yellow light. 3

14. An ion with mass number 37 possesses one unit of negative charge. If the ion contains 11.1% more neutrons than the electrons, find the symbol of the ion. 3

15. The quantum numbers of six electrons are given below. Arrange them in order of increasing energies. If any of these combination(s) has/have the same energy lists: 3

- (i) $n = 4, l = 2, m_l = -2, m_s = -\frac{1}{2}$
 (ii) $n = 3, l = 2, m_l = 1, m_s = +\frac{1}{2}$
 (iii) $n = 4, l = 1, m_l = 0, m_s = +\frac{1}{2}$
 (iv) $n = 3, l = 2, m_l = -2, m_s = -\frac{1}{2}$
 (v) $n = 3, l = 1, m_l = -1, m_s = +\frac{1}{2}$
 (vi) $n = 4, l = 1, m_l = 0, m_s = +\frac{1}{2}$

16. Among the following pairs of orbitals, which orbital will experience the larger effective nuclear charge? (i) 2s and 3s, (ii) 4d and 4f and (iii) 3d and 3p. 3

17. (i) How many sub-shells are associated with $n = 4$? 3
 (i) How many electrons will be present in the sub-shells having m_s value of $-1/2$ for $n = 4$?

18. (i) Arrange the following ions in the order of increasing ionic radii. 3
 $\text{Na}^+, \text{Mg}^{2+}, \text{F}^-, \text{O}^{2-}$
 (i) Explain why Be has higher ionization enthalpy than B.
 (ii) Predict the formula of compound which might be formed by silicon and bromine.

19. Give reason for the following: 3
 (i) Halogens act as good oxidising agent.
 (ii) Electron gain enthalpy of noble gas is almost zero.
 (iii) Na and Mg^+ have same number of electrons but removal of electron from Mg^+ requires more energy.

20. Give reason for the following: 3

- (iv) Halogens act as good oxidising agent.
- (v) Electron gain enthalpy of noble gas is almost zero.
- (vi) Na and Mg^+ have same number of electrons but removal of electron from Mg^+ requires more energy.

21. Among the elements of second period Li to Ne, pick out element: 3

- (i) with the highest first ionisation energy
- (ii) with highest electronegativity
- (iii) with largest atomic radius
- (iv) that is most reactive non-metal
- (v) that is most reactive metal
- (vi) with valency equal to 4.

22. The first (IE_1) and second (IE_2) ionisation enthalpies (kJ mol^{-1}) of three elements I, II and III are given below: 3

Element	IE_1	IE_2
I	403	2640
II	549	1060
III	1142	2080

Identify the element which is likely to be (i) non-metal (ii) an alkali metal (iii) an alkaline earth metal.

23. The first ($\Delta_i H_1$) and the second ($\Delta_i H_2$) ionization enthalpies (in kJ mol^{-1}) and the ($\Delta_{eg} H$) electron gain enthalpy (in kJ mol^{-1}) of a few elements are given below:

Element	ΔH_1	ΔH_2	$\Delta_{eg} H$
I	520	7300	- 60
II	419	3051	- 48
III	1681	3374	- 328
IV	1008	1846	- 295
V	2372	5251	+ 48
VI	738	1451	- 40

Which of the above elements is likely to be:

- (i) the least reactive element.
- (ii) the most reactive metal.
- (iii) the most reactive non-metal.
- (iv) the least reactive non-metal.
- (v) the metal which can form a stable binary halide of the formula MX_2 (X = halogen).
- (vi) the metal which can form a predominantly stable covalent halide of the formula MX (X = halogen)?

24. Draw the molecular structures of 3

- (i) XeF_2 , (ii) XeOF_2 and (iii) XeF_4 .

25. What is meant by hydrogen bond? What is bond energy of hydrogen bond? Why is HF, H_2O are liquids whereas HCl, HBr, HI and H_2S are gases? 3

26. What is the total number of sigma and pi bonds in the following molecules? 3
(i) C_2H_2 (ii) C_2H_4
27. Calcium carbonate reacts with aqueous HCl to give CaCl_2 and CO_2 according to the reaction 5
given below:
$$\text{CaCO}_3(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$$

What mass of CaCl_2 will be formed when 250 ml of 0.76 M HCl reacts with 1000 g of CaCO_3 ? Name the limiting reagent. Calculate the number of moles of CaCl_2 formed in the reaction.
28. (i) Write outer electronic configuration of Cr atom. Why are half filled orbitals more stable? 5
(ii) State Heisenberg's uncertainty principle. An electron has a velocity of 50 m s^{-1} , accurate upto 99.99%. Calculate the uncertainty in locating its position.
(Mass of electron = $9.1 \times 10^{-31} \text{ kg}$, $h = 6.6 \times 10^{-34} \text{ J s}$)

1. BIOLOGY RECORD – HOMEWORK

AUTUMN BREAK HOLIDAY H/W

2. Chapter – 7

1. What is the difference between male and female frogs?
2. Explain the male and female reproductive systems of a frog.
3. Explain the frog's nervous system.

3. Chapter – 8

1. What are endomembrane cell organelles? Explain each organelle with a proper diagram.
2. Explain mitochondria, chloroplast, centriole, and cilia. Also draw neat, labelled diagrams

4. Chapter – 9

1. Explain enzyme classification.
2. Explain the types of enzymes.
3. Describe the nature of enzymes.
4. What is activation energy? Explain with a graph.
5. Explain the protein structure.

PROJECT WORK

1. Study of mitosis in onion root tips.
2. Estimate the sugars, starch, and proteins in plants.
3. Vermicomposting.
4. Paper chromatography

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK HOLIDAY HOMEWORK

Class: XI

Subject: Computer Science (083)

Session: 2026–27

Q1. Number System:

- a) Convert $(101101)_2$ into its decimal equivalent.
- b) Convert $(45)_{10}$ into its binary equivalent.
- c) Convert $(7B)_{16}$ into its decimal equivalent.

Q2. Evaluate the following expressions and write the order of evaluation:

- a) $15 // 4 + 3 ** 2$
- b) $20 \% 6 * 3$
- c) $5 + 2 * 3 ** 2$
- d) $\text{not } (10 > 5) \text{ or } (4 == 4)$

Q3. Write a Python program to input the age of a person and classify the person as follows:

- Below 13 years: Child
- 13 to 19 years: Teenager
- 20 to 59 years: Adult
- 60 years and above: Senior Citizen

Validate the input to ensure that the age is not negative.

Q4. Write a Python program to input a sentence and perform the following operations:

- a) Display the number of characters in the sentence.
- b) Display the sentence in uppercase and lowercase.
- c) Count the number of vowels in the sentence.
- d) Check whether the word "Python" occurs in the sentence.

Q5. Lists – Basic Operations:

Create a list containing the marks of 10 students. Write a Python program to:

- a) Display the complete list.
- b) Find the maximum and minimum marks.
- c) Calculate the average marks.
- d) Sort the list in ascending order.
- e) Display the marks in descending order.

Q6. List Processing:

Write a Python program to input 10 integers into a list and display:

- a) All even numbers.
- b) All odd numbers.
- c) The sum of all even numbers.
- d) The total number of odd numbers.

Q7. Output-Based Question:

Predict the output of the following Python code and explain the result.

```
numbers = [10, 20, 30, 40, 50]
print(numbers[1])
print(numbers[-1])
print(numbers[1:4])
numbers[2] = 100
numbers.append(60)
print(numbers)
```

Q8. Write a Python program to display the following pattern using nested loops:

```
*
* *
* * *
* * * *
* * * * *
```

Q9. Write a Python program to input a word and check whether it is a palindrome. A palindrome reads the same forward and backward, for example, MADAM.

Q10. Write a Python program to input a positive integer and calculate the sum of its digits using a while loop.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK HOLIDAY HOMEWORK – 2026

Class XI | Artificial Intelligence (AI – 843)

Part A: Employability Skills

Q1. Communication Skills – III

- Explain the different methods of communication with suitable examples.
- What are the seven Cs of effective communication? Explain any five.
- Explain the importance of active listening and non-verbal communication.

Q2. Self-Management Skills – III

- What is self-management? Explain its importance in daily life.
- Explain any five stress-management techniques.
- What is SMART goal setting? Explain with a suitable example.

Part B: Subject-Specific Skills – Artificial Intelligence

Q3. Introduction to Artificial Intelligence

- Define Artificial Intelligence and explain its applications in daily life.
- Differentiate between AI, Machine Learning and Deep Learning.
- Explain the three domains of AI with suitable examples.

Q4. Introduction to Python

- Explain Python data types with examples.
- Differentiate between mutable and immutable data types.
- Write a Python program to accept three numbers and display their sum, average and largest number.

Q5. Capstone Project

- What is a Capstone Project? Explain its purpose in the study of Artificial Intelligence.
- Identify one real-life problem in your school or community that could be addressed using AI. State the problem, target users and expected benefit.

Autumn break homework

Subject: English

Class: XII

- 1) Find out rag pickers in your locality and ask a few questions to them about their background similar to the interview conducted by the author in the chapter “The Last lesson” (Also take a selfie while conversing with the rag pickers)
- 2) Take a printout of recent board exam and solve all the questions and submit the answers in A4 sheets with stick & file
- 3) Collect the information where incidents of imposing the teaching of foreign language occurred due to war as in the cities of Alsace & Lorraine and write in detail the names of cities/countries (including pictures/images) and the languages imposed over there.
- 4) Write an article/poem on your own and submit them for the class magazine
- 5) Project on **Comparative character analysis** using the characteristic features of all the completed chapters.

पीएम श्री केन्द्रीय विद्यालय श्रीकाकुलम

कक्षा – 12

शरद ऋतु अवकाश गृह कार्य (2026-27)

➤ निम्नलिखित में से किसी एक विषय पर लगभग 120 शब्दों में रचनात्मक लेख लिखिए -

- सोशल मीडिया : अभिव्यक्ति का सशक्त माध्यम या समय की बर्बादी ?
- जलवायु परिवर्तन और पर्यावरण संरक्षण में युवाओं की भूमिका
- यदि एक दिन के लिए इंटरनेट बंद हो जाए...

➤ सी.बी.एस.ई. के गत वर्षों के 02 प्रश्न पत्र हल कीजिए।

* निम्नलिखित में से किसी एक विषय (Any one Topic) पर 'परियोजना कार्य' (Project work) कीजिए :- (प्रोजेक्ट फाइल अलग से बनाइए)

1. समय समायोजन का महत्त्व
2. मीडिया की ताकत और वर्तमान भूमिका
3. बेबी हालदार और भक्तिन
4. विज्ञापन की दुनिया
5. भारतीय बाज़ार का बदलता स्वरूप
6. स्मार्ट फोन और भटकता युवा वर्ग
7. डॉ भीमराव अम्बेडकर की कल्पना का समाज
8. पीढ़ी अंतराल के प्रमुख कारण एवं निवारण
9. सिन्धु घाटी सभ्यता; हमारा गौरव
10. औरतों की शिक्षा एवं उनके मानवाधिकार
11. शब्द कोश
12. विश्व भाषा के रूप में हिन्दी
13. विज्ञापन का समाज पर प्रभाव
14. शिक्षा में इंटरनेट का प्रभाव
15. भारतीय ज्ञानपीठ पुरस्कार प्राप्त हिन्दी रचनाकार
16. प्रेमचंद का व्यक्तित्व और कृतित्व
17. जनसंचार माध्यम में तकनीकी माध्यमों का योगदान
18. कोरोना काल और ऑनलाइन शिक्षा
19. नई शिक्षा नीति एक परिचय
20. समाचार पत्र समाज का दर्पण है

PM SHRI KV SRIKAKULAM
AUTUMN BREAK HOLIDAY HOMEWORK
Mathematics | Class 12

Kendriya Vidyalaya - Session 2026-27

Autumn Break: 15 October 2026 to 24 October 2026 (10 days)

Revision of chapters completed before the break (as per the Split-Up Syllabus)

Chapters Covered (for revision)

- Ch 1 - Relations and Functions
- Ch 2 - Inverse Trigonometric Functions
- Ch 3 - Matrices
- Ch 4 - Determinants
- Ch 5 - Continuity and Differentiability
- Ch 6 - Applications of Derivatives
- Ch 7 - Integrals
- Ch 8 - Application of Integrals
- Ch 9 - Differential Equations
- Ch 10 - Vector Algebra

Instructions for Students

1. Attempt one worksheet each day. Do all the work neatly in your Maths notebook.
2. Write the question number and then the complete solution, showing each step.
3. Draw diagrams and graphs with a pencil and ruler wherever needed.
4. Revise the chapter from the textbook before starting that day's worksheet.
5. This is revision work only, based on what has already been taught in class.

Day 1: Relations and Functions

1. Check whether $f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = 3x + 2$ is one-one.
2. Show that $f(x) = x^2$ is not one-one on $\mathbb{R}$.
3. Find the inverse of $f(x) = 2x + 3$.
4. Check whether the relation $R = \{(1,1), (2,2), (3,3), (1,2)\}$ on $\{1, 2, 3\}$ is reflexive, symmetric and transitive.
5. Show that $f : \mathbb{R} \rightarrow \mathbb{R}$, $f(x) = 5x + 3$ is bijective.
6. Let $A = \{1, 2, 3\}$. Find the number of one-one functions from A to A .
7. If $f(x) = x + 3$ and $g(x) = x^2$, find $f \circ g(x)$ and $g \circ f(x)$.
8. Show that $f : \mathbb{N} \rightarrow \mathbb{N}$, $f(x) = 2x$ is one-one but not onto.

Day 2: Inverse Trigonometric Functions

1. Find the principal value of $\sin^{-1}(\frac{1}{2})$.
2. Find the value of $\cos^{-1}(-\frac{1}{2})$.
3. Evaluate: $\tan^{-1}(1)$.
4. Find the value of $\sin^{-1}(\sin(\frac{2\pi}{3}))$.
5. Evaluate: $\cos^{-1}(\cos(\frac{7\pi}{6}))$.

6. Prove: $\tan^{-1}(1) + \tan^{-1}(2) + \tan^{-1}(3) = \pi$.
7. Find the value of $\sin(\cos^{-1}(3/5))$.
8. Evaluate: $\tan^{-1}(\sqrt{3}) - \cot^{-1}(-\sqrt{3})$.

Day 3: Matrices

1. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 \\ 1 & 3 \end{bmatrix}$, find $A + B$.
2. Find $2A$ where $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$.
3. Write the order of a matrix with 3 rows and 4 columns.
4. Find AB where $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 \\ 1 & 3 \end{bmatrix}$.
5. Find the transpose of $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$.
6. If $A = \begin{bmatrix} 2 & 3 \\ 1 & -1 \end{bmatrix}$, find A^2 .
7. Find x and y if $\begin{bmatrix} x & 3 \\ 2 & y \end{bmatrix} = \begin{bmatrix} 5 & 3 \\ 2 & 4 \end{bmatrix}$.
8. Show that the matrix $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ is symmetric.

Day 4: Determinants

1. Find the determinant of $\begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$.
2. Find the determinant of $\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$.
3. Find the value of x if $|\begin{bmatrix} x & 2 \\ 3 & 4 \end{bmatrix}| = 10$.
4. Find the area of the triangle with vertices $(0, 0)$, $(3, 0)$ and $(0, 4)$ using determinants.
5. Find the adjoint of $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$.
6. Find the inverse of $A = \begin{bmatrix} 2 & 3 \\ 1 & 4 \end{bmatrix}$.
7. Solve using Cramer's rule: $x + y = 5$ and $x - y = 1$.
8. Find the minor of the element 5 in the matrix $\begin{bmatrix} 1 & 2 \\ 3 & 5 \end{bmatrix}$.

Day 5: Continuity and Differentiability

1. Differentiate: $x^3 + 2x^2 - 5$.
2. Differentiate: $\sin x + \cos x$.
3. Find dy/dx if $y = e^x + \log x$.
4. Differentiate: $y = x \sin x$.
5. Check the continuity of $f(x) = |x|$ at $x = 0$.
6. Differentiate: $y = (2x + 3)^5$.
7. Find dy/dx if $y = \tan x$.
8. Differentiate: $y = x^2 e^x$.

Day 6: Applications of Derivatives

1. Find the slope of the tangent to $y = x^2$ at $x = 2$.
2. Find the maximum value of $f(x) = -(x - 1)^2 + 5$.
3. Find the interval in which $f(x) = x^2 - 4x$ is increasing.
4. Find the critical points of $f(x) = x^3 - 3x$.
5. Find the equation of the tangent to $y = x^3$ at the point $(1, 1)$.
6. The radius of a circle is increasing at 2 cm/s. Find the rate of increase of its area when $r = 5$ cm.
7. Find the local minimum of $f(x) = x^2 - 6x + 5$.
8. Find two positive numbers whose sum is 16 and whose product is maximum.

Day 7: Integrals

1. Evaluate: integral of $x^2 dx$.
2. Evaluate: integral of $(2x + 3) dx$.
3. Evaluate: integral of $(1/x) dx$.
4. Evaluate: integral of $\sin x dx$.
5. Evaluate: integral from 0 to 1 of $x dx$.
6. Evaluate: integral of $e^x dx$.
7. Evaluate: integral of $(x^2 + 1/x) dx$.
8. Evaluate: integral from 0 to $\pi/2$ of $\cos x dx$.

Day 8: Application of Integrals

1. Find the area bounded by $y = x^2$, the x-axis, $x = 0$ and $x = 3$.
2. Find the area of the circle $x^2 + y^2 = 9$ using integration.
3. Find the area bounded by $y = x$, the x-axis and $x = 4$.
4. Find the area enclosed between $y = x^2$ and $y = x$.
5. Find the area of the region bounded by $y = \sqrt{x}$, the x-axis, $x = 0$ and $x = 4$.
6. Find the area bounded by the ellipse $x^2/16 + y^2/9 = 1$.
7. Find the area of the triangle bounded by $y = 2x$, the x-axis and $x = 3$.
8. Find the area bounded by $y = x^2$, $x = 1$, $x = 2$ and the x-axis.

Day 9: Differential Equations

1. Find the order and the degree of $d^2y/dx^2 + (dy/dx)^3 + y = 0$.
2. Solve: $dy/dx = 2x$.
3. Solve: $dy/dx = y/x$.
4. Find the order and the degree of $(dy/dx)^2 + y = 0$.
5. Solve: $dy/dx + y = 0$.
6. Verify that $y = e^x$ is a solution of $dy/dx - y = 0$.
7. Solve: $dy/dx = \cos x$.
8. Find the integrating factor of $dy/dx + y/x = x$.

Day 10: Vector Algebra and Mixed Revision

1. Find the magnitude of the vector $3i + 4j$.
 2. Find the unit vector in the direction of $6i + 8j$.
 3. Find the dot product of $(i + 2j)$ and $(3i + j)$.
 4. If $|a| = 3$, $|b| = 4$ and the angle between them is 60 degrees, find $a \cdot b$.
 5. Find the cross product of i and j .
 6. Find the direction cosines of the vector $i + j + k$.
 7. If $a = 2i - j$ and $b = i + j$, find $a + b$.
 8. Find the projection of $a = 2i + 3j$ on $b = i + j$.
-

Chapter – 13 (Nuclei)

1. What is Mass-defect? With the help of Einstein's Mass-Energy theory explain how Binding energy associated with it?
2. Draw the plot between Binding Energy per Nucleon and Mass Number. Draw the conclusions of the curve and discuss nuclear fusion and nuclear fission.
3. Differentiate between nuclear fusion and nuclear fission with suitable example.
4. What is meant by radioactive decay? Explain its kinds with examples.
5. Discuss thermonuclear fusion with example of nuclear reaction inside the Sun.

Chapter – 12 (Atoms)

6. Explain Rutherford's gold foil experiment of discovery of Nucleus with neat-labelled schematic diagram. Draw the plot between scattering angle and number of particles and mention the conclusions.
7. Mention the postulates and limitations of Bohr's Atomic theory.
8. With neat labelled diagram explain the energy levels of Hydrogen atom.
9. What is line spectrum? Discuss various Spectrum formed by Hydrogen atom (Differentiate between emission and absorption spectrum).
10. Explain de-Broglie's explanation of Bohr's theory. Mention the limitations of Bohr's Theory.

Chapter – 11 (Dual nature of Radiation and Matter)

11. What is photoelectric effect? Discuss various methods of photoelectric emission. Discuss effect of a) intensity b) potential c) frequency of incident light on photoelectric effect.
12. What is photon? Mention properties of photon.
13. Discuss Einstein's photoelectric equation. Give the equation in terms of maximum a) Kinetic Energy, b) stopping potential and c) threshold frequency.
14. Discuss dual nature of light.
15. Discuss dual nature of matter and its significance.

Chapter – 10 (Wave optics)

16. Define wave front. Explain Huygen's construction with suitable diagram. Mention the limitations of Huygen's construction. Draw the diagrams show refraction of wave front through a prism and a convex lens; reflection in a concave mirror.
17. Explain refraction of wave front from rare to dense medium using Huygen's Principle (Derive Snell's law of refraction).
18. Explain reflection of wave front using Huygen's Principle.
19. Explain interference using Young's Double Slit Experiment with suitable expression for bright and dark fringe, fringe width. Mention conditions for sustainable interference.
20. Explain diffraction using single Slit Experiment with suitable expression for bright and dark fringe. Mention conditions for sustainable interference.
21. What is polarization? Mention various natural and artificial ways of polarization and its applications.

Chapter – 9 (Ray Optics)

22. Derive Mirror Equation.
23. Derive Lens maker's formula and thin lens formula.
24. Derive expression for minimum deviation through a small angle prism.
25. Describe construction and working principle of Simple microscope with neat labelled schematic diagram. Give expressions for image formed at (a) D (b) at infinity.
26. Describe construction and working principle of Compound microscope with neat labelled schematic diagram. Give expressions for image formed at (a) D (b) at infinity.
27. Describe construction and working principle of refractive and reflective telescope with neat labelled schematic diagram.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

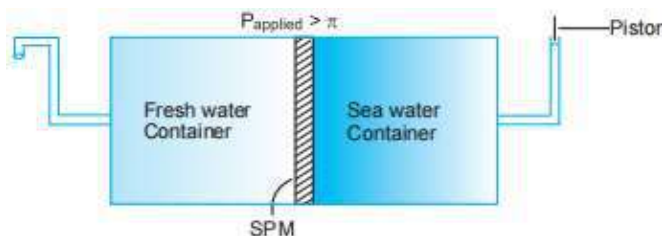
HOLIDAY HOMEWORK AUTUMN BREAK 2026-27

CLASS XII SUBJECT – CHEMISTRY

CHAPTER -1 (SOLUTIONS)

- 1 (a) Define the following terms : (i) Ideal solution (ii) Osmotic pressure
(b) Calculate the boiling point elevation for a solution prepared by adding 10 g CaCl_2 to 200 g of water, assuming that CaCl_2 is completely dissociated.
(K_b for water = $0.512 \text{ K kg mol}^{-1}$; Molar mass of $\text{CaCl}_2 = 111 \text{ g mol}^{-1}$) **Ans : 0.69 K**
- 2 (a) What type of deviation is shown by a mixture of ethanol and acetone? Give reason.
(b) A solution of glucose (molar mass = 180 g mol^{-1}) in water is labelled as 10% (by mass). What would be the molality and molarity of the solution? (Density of solution = 1.2 g mL^{-1})
- 3 (a) Vapour pressure of pure water at 298 K is 23.8 mm Hg. 50 g of urea NH_2CONH_2 is dissolved in 850 g of water. Calculate the vapour pressure of water for this solution and its relative lowering. **Ans: 0.0173**
(b) Explain types of azeotropes with graph.
- 4.(a) The depression in freezing point of water observed for the same amount of acetic acid, trichloroacetic acid and trifluoroacetic acid increases in the order given above. Explain briefly.
(b) Henry's law constant for the molality of methane in benzene at 298 K is $4.27 \times 10^5 \text{ mm Hg}$. Calculate the solubility of methane in benzene at 298 K under 760 mm Hg. **Ans : 178×10^{-5}**

Q5.



- (a) Given alongside is the sketch of a plant for carrying out a process.
(i) Name the process occurring in the given plant.
(ii) To which container does the net flow of solvent take place?
(iii) Name one SPM which can be used in this plant.
(iv) Give one practical use of the plant.
- b) A solution containing 15 g urea (molar mass = 60 g mol^{-1}) per litre of solution in water has the same osmotic pressure (isotonic) as a solution of glucose (molar mass = 180 g mol^{-1}) in water. Calculate the mass of glucose present in one litre of its solution.
Ans. b) 45 g

CHAPTER -2 (ELECTROCHEMISTRY)

1. Calculate emf and ΔG for the following cell :

$\text{Mg(s)}/\text{Mg}^{2+}(0.001\text{M})//\text{Cu}^{2+}(0.0001\text{M})/\text{Cu(s)}$;

$E^\circ_{\text{Cu}^{2+}/\text{Cu}} = +0.34\text{V}$, $E^\circ_{\text{Mg}^{2+}/\text{Mg}} = -2.37\text{V}$

2. Calculate $\Delta_r G^\circ$ for the reaction at 25°C : $\text{Au(s)} + \text{Ca}^{+2}(1\text{M}) \rightarrow \text{Au}^{3+}(1\text{M}) + \text{Ca(s)}$,

$E^\circ_{\text{Ca}^{2+}/\text{Ca}} = -2.87\text{V}$, $E^\circ_{\text{Au}^{3+}/\text{Au}} = +1.50\text{V}$. Predict whether the reaction will be spontaneous or not at 25°C which of the above two half cells will act as an oxidizing agent and which one will be a reducing agent?

3. Calculate the emf of the cell . The following chemical reaction is occurring in an electrochemical cell. $\text{Mg(s)} + 2\text{Ag}^+(0.0001\text{M}) \rightarrow \text{Mg}^{2+}(0.10\text{M}) + 2\text{Ag(s)}$ The electrode values are $\text{Mg}^{2+}/\text{Mg} = -2.36\text{V}$ $\text{Ag}^+/\text{Ag} = 0.81\text{V}$. For this cell calculate / write (a) (i) E° value for the electrode $2\text{Ag}^+/\text{Ag}$ (ii) Standard cell potential E°_{cell} . (b) Cell potential (E)cell (c) (i) Symbolic representation of the above cell. (ii) Will the above cell reaction be spontaneous?

4. A voltaic cell is set up at 25°C With the following half cells : $\text{Al(s)}/\text{Al}^{3+}(0.001\text{M})$ and $\text{Ni}^{2+}(0.50)/\text{Ni(s)}$, Write the equation for the cell reaction that occurs when the cell generates an electric current and determine the cell potential (given $E^\circ_{\text{Ni}^{2+}/\text{Ni}} = -0.25\text{V}$, $E^\circ_{\text{Al}^{3+}/\text{Al}} = -1.66\text{V}$).

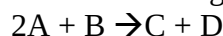
5. One half cell in a voltaic cell is constructed from a silver wire dipped in silver nitrate solution of unknown concentration . The other half cell consists of a zinc electrode in a 0.10M solution of

Zinc nitrate. A voltage of 1.48V is measured for this cell. Use this information to calculate the concentration of silver nitrate solution.

$$(E^\circ_{\text{Zn}^{2+}/\text{Zn}} = -0.763\text{V}, E^\circ_{\text{Ag}^+/\text{Ag}} = +0.80\text{V})$$

CHAPTER -3 (CHEMICAL KINETICS)

1. The following results have been obtained during the kinetic studies of the reaction :



Experiment No.	[A] [B]	Initial rate of formation of D
i	0.1 M 0.1 M	$6.0 \times 10^{-3} \text{ M min}^{-1}$
ii	0.3 M 0.2 M	$7.2 \times 10^{-2} \text{ M min}^{-1}$
iii	0.3 M 0.4 M	$2.88 \times 10^{-1} \text{ M min}^{-1}$
iv	0.4 M 0.1 M	$2.40 \times 10^{-2} \text{ M min}^{-1}$

Calculate the rate of formation of D when $[\text{A}] = 0.5 \text{ mol L}^{-1}$ and $[\text{B}] = 0.2 \text{ mol L}^{-1}$.

Ans : 1 $1.2 \times 10^{-1} \text{ mol L}^{-1} \text{ min}^{-1}$

2. For the hydrolysis of methyl acetate in aqueous solution, the following results were obtained :

t/s	0	30	60
$[\text{CH}_3\text{COOCH}_3]/\text{mol L}^{-1}$	0.60	0.30	0.15

(i) Show that it follows pseudo first order reaction, as the concentration of water remains constant.

(ii) Calculate the average rate of reaction between the time interval 30 to 60 seconds.

Ans: (i) $k = 0.0231 \text{ s}^{-1}$ (ii) $5 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$

- 3.(i) Define half-life of a reaction. Write the expression of half-life for (a) zero order reaction and (b) first order reaction.
- (ii) The rate constants of reaction at 500 K and 700 K are 0.02 s^{-1} and 0.07 s^{-1} respectively. Calculate the value of activation energy, E_a . **Ans: (ii) $E_a = 18228.07 \text{ J mol}^{-1}$**
4. (i) The first order rate constant for the decomposition of ethyl iodide by the reaction : $\text{C}_2\text{H}_5\text{I(g)} \rightarrow \text{C}_2\text{H}_4\text{(g)} + \text{HI(g)}$ at 600 K is $1.6 \times 10^{-5} \text{ s}^{-1}$. Its energy of activation is 209 kJ mol^{-1} . Calculate the rate constant of reaction at 700 K.
- (ii) How does a change in temperature affect the rate of a reaction? How can this effect on the rate constant of reaction be represented quantitatively? **Ans : (i) $6.34 \times 10^{-3} \text{ s}^{-1}$**
5. (i) A first order reaction has a rate constant value of 0.00510 min^{-1} . If we begin with 0.10 M concentration of the reactant, how much of the reactant will remain after 3.0 hours?
- (ii) Explain the difference between the average rate and instantaneous rate of chemical reaction.
- Ans : (i) 0.04 M**

CHAPTER -4 (D AND F BLOCK ELEMENTS)

1. What is lanthanoid contraction? Give its cause and consequences.
- 2.(i) Differentiate between lanthanoids and actinoids.
 - (ii) what is misch metal ? What are its uses?
- 3 (a) Write the method of preparation of potassium dichromate.
 - (b) What is the effect of pH on dichromate ion?
- 4 . Explain giving reasons:
 - a. Transition metals and many of their compounds show paramagnetic behavior.
 - b. The enthalpies of atomization of the transition metals are high.
 - c. The transition metals generally form coloured compounds.
 - d. Transition metals and their many compounds act as good catalysts.
 - e. Scandium ($Z = 21$) is a transition element but zinc ($Z = 30$) is not?
5. a). What is the state of hybridization of Mn in MnO_4^- ?
 - b) Write an application of potassium permanganate.
 - c) What are the products formed after heating potassium permanganate?
 - d) How many electrons are involved in oxidation by KMnO_4 , in different mediums?

CHAPTER -5 (COORDINATION COMPOUNDS)

- 1(i) What is crystal field splitting energy? How does the magnitude of Δ_0 decide the actual configuration of d-orbitals in a coordination entity?
- (ii) Explain the difference between a weak field ligand and a strong field ligand.
- (iii) Predict the number of unpaired electron in $[\text{Pt}(\text{CN})_4]^{2-}$.
- 2(i) Aqueous copper sulphate solution (blue in colour) gives: (i) a green precipitate with aqueous potassium fluoride and (ii) a bright green solution with aqueous potassium chloride. Explain these experimental results.
- (ii) Give evidence that $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$ and $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$ are ionisable isomers.
- (iii) Why are low spin tetrahedral complexes not formed ?

- 3(i) How many geometrical isomers are possible in the following coordination entities?
 (a) $[\text{Cr}(\text{C}_2\text{O}_4)_3]^{3-}$ (b) $[\text{CoCl}_3(\text{NH}_3)_3]$ (c) $[\text{Pt}(\text{en})_2\text{Cl}_2]$
- (ii). Using IUPAC norms, write the formulae for the following :
 (a) tetrahydroxozincate(II)
 (b) hexaammineplatinum (IV)
- 4(a) Explain with two examples each of the following: coordination entity, ligand, coordination number, coordination polyhedron, homoleptic and heteroleptic.
 (a) Draw the figure to show the splitting of d-orbital in an octahedral crystal field.
 (b) Calculate the spin only magnetic moment of the complex $[\text{FeF}_6]^{3-}$.
- 5(a) Explain the bonding in coordination compounds in terms of Werner's postulates.
 (a) what is meant by chelate effect? Give an example.

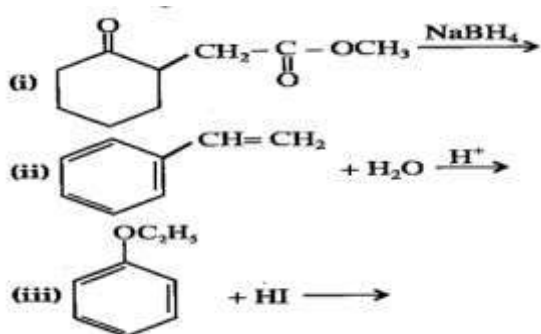
CHAPTER -6 (HALOALKANES AND HALOARENES)

1. (a) Write the formula of freon.
 (b) Give two uses of chlorofluorocarbons.
 (c) How does freon-12 deplete ozone layer?
 (d) Do you think the use of CFCs should be banned? Give reason.
2. (a) What are ambident nucleophiles? Explain with an example.
 (b) Write the structure of the major organic product for the reaction:
 $(\text{CH}_3)_3\text{CBr} + \text{KOH} \rightarrow$
 (c) n-butyl bromide has higher boiling point than tert.-butyl bromide?
 (d) Butan-1-ol is optically inactive but Butan-2-ol is optically active.
 (e) Benzyl chloride undergoes $\text{S}_{\text{N}}1$ reaction faster than cyclohexyl methyl chloride.
3. (a) Arrange each set of compounds in order of increasing boiling points
 Bromomethane, bromoform, chloromethane, dibromomethane.
 (b) Which of the compounds will react faster in $\text{S}_{\text{N}}1$ reaction with the OH^- ion?
 $\text{CH}_3\text{—CH}_2\text{—Cl}$ or $\text{C}_6\text{H}_5\text{—CH}_2\text{—Cl}$
 (c) Name the reaction: $\text{C}_6\text{H}_5\text{ONa} + \text{C}_2\text{H}_5\text{Cl} \rightarrow \text{C}_6\text{H}_5\text{—O—C}_2\text{H}_5$
 (d) Complete the following analogy
 Same molecular formula but different structures: A
 Non super imposable mirror images: B
 (e) Why iodoform has appreciable antiseptic properties?
4. (a) What is the direction of the polarity of a Carbon Halogen bond?
 (b) Fluorine is the most electronegative of the Halogens, yet Chloromethane has the largest dipole moment of the halomethanes. How is this possible?
 (c) Ethane and Bromomethane have widely different boiling points. Explain.
 (d) What is the stereochemistry of the $\text{S}_{\text{N}}2$ reaction?
 (e) What is the order of stability of carbocations?

5. (a) How would you convert: (i) Benzene to Biphenyl (ii) Aniline to Chlorobenzene.
(b) Arrange in order of property indicated:
(i) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Br}$, $(\text{CH}_3)_3\text{Br}$, $(\text{CH}_3)_3\text{CHCH}_2\text{Br}$ (Increasing boiling point)
(ii) CH_3F , CH_3I , CH_3Cl , CH_3Br (nucleophilic substitution).
(c) p-Dichlorobenzene has higher melting point and lower solubility than those of o- and m- isomers. Discuss.

CHAPTER -7 (ALCOHOLS ,PHENOLS AND ETHERS)

1. (a) Write the IUPAC names of the following compounds:
i. $\text{CH}_3 - \text{C}(\text{CH}_3)_2 \text{CH}(\text{OH}) \text{CH}_3$
ii. $\text{CH}_3 \text{CH}=\text{CH} \text{CH}(\text{Br}) \text{CH}_2\text{OH}$
iii. $\text{CH}_3 - \text{O} - \text{CH} \text{C}(\text{CH}_3)_3$
- (b) Give simple chemical test to distinguish between the following pairs of compounds:
i. Ethanol and phenol
ii. Propanol and 2-methyl propan-2-ol
2. (a) Arrange the following compounds in increasing order of acidic strength
P-nitrophenol, ethanol, phenol
(b) Arrange the following in increasing order of boiling point
Butanol, 2-methyl propanol, 2,2-dimethyl propanol, propanol
(c) Write the equations involved in following reactions:
i. Oxidation reaction of Phenol
ii. Williamson synthesis
iii. Friedal crafts alkylation of phenol
3. (a) Account for the following:
i. Alcohols are soluble in water as compared to hydrocarbons.
ii. Which of the following is more volatile: o-nitrophenol, p-nitrophenol?
(b) Write Lucas test for primary, secondary and tertiary alcohol.
4. (a) Complete the following equations:



(b) Why phenol undergoes electrophilic substitution reactions?

5. (a) Predict the reagent for carrying out the following conversions:

- Phenol to benzoquinone
- Anisole to p-bromoanisole
- Phenol to 2, 4, 6-tribromophenol

(b) Write equation for the following reactions:

(a) Kolbe's reaction (b) Reimer-Tiemann reaction

CHAPTER -8 (ALDEHYDES ,KETONES AND CARBOXYLIC ACIDS)

1. Which of the following compounds would undergo Aldol condensation, which the Cannizzaro reaction and which neither? Write the structures of the expected products of Aldol condensation and Cannizzaro reaction.

- (a) Methanal (b) 2-Methylpentanal (c) Benzaldehyde (d) Benzophenone (e) Cyclohexanone
(f) 1-Phenylpropanone (g) Phenylacetaldehyde (h) Butan-1-ol (i) 2,2-Dimethylbutanal.

2. Give reasons for the following:

- $\text{C}_6\text{H}_5\text{COOH}$ is weaker than formic acid.
- HCOOH and CH_3COOH are differentiated by Tollen's reagent.
- $\text{R}-\text{COOH}$ do not give characteristic reaction of $>\text{C}=\text{O}$ (Carbonyl group)
- Carboxylic acids are stronger acids than phenols.
- Ethanoic acid does not show Cannizzaro reaction

3. (i) Arrange the following in the property indicated:

- Acetaldehyde, Acetone, di-tert-butyl ketone, Methyl tert-butyl ketone in
(increasing reactivity towards HCN)

(b) $\text{CH}_3\text{CH}_2\text{CHBrCOOH}$, $\text{CH}_3\text{CHBrCH}_2\text{COOH}$, $(\text{CH}_3)_2\text{CHCOOH}$,
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ (in increasing
order of acid strength)

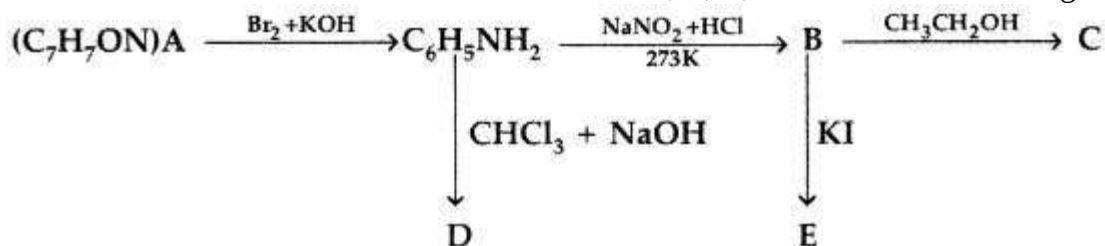
(ii) An aliphatic compound 'A' with a molecular formula of $\text{C}_3\text{H}_6\text{O}$ reacts with phenylhydrazine to give compound 'B'. Reaction of 'A' with I_2 in alkaline medium on warming, gives yellow precipitate 'C'. Identify the compounds A,B and C.

4. What is meant by the following terms? Give an example in each case.

(i)Cyanohydrin (ii) Semicarbazone (iii) Schiff base (iv) Ketal (v)Oxime

CHAPTER -9 (AMINES)

Question 1 An aromatic compound “A” of molecular formula $\text{C}_7\text{H}_7\text{ON}$ undergoes a series of reactions as shown below. Write the structures of A, B, C, D and E in the following reactions :



Question 2 (a) Write the structures of main products when aniline reacts with the following reagents :

(i) Br_2 water (ii) HCl (iii) $(\text{CH}_3\text{CO})_2\text{O}$ /pyridine

(b) Arrange the following in the increasing order of their boiling point :

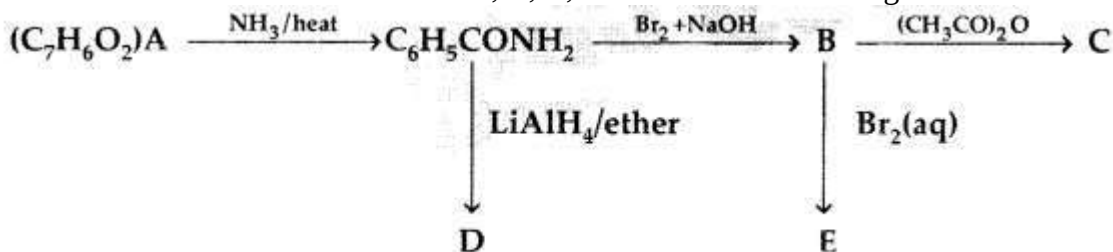
$\text{C}_2\text{H}_5\text{NH}_2$, $\text{C}_2\text{H}_5\text{OH}$, $(\text{CH}_3)_3\text{N}$

(c) Give a simple chemical test to distinguish between the following pair of compounds :

$(\text{CH}_3)_2\text{NH}$ and $(\text{CH}_3)_3\text{N}$

Question 3

An aromatic compound ‘A’ of molecular formula $\text{C}_7\text{H}_6\text{O}_3$ undergoes a series of reactions as shown below. Write the structures of A, B, C, D and E in the following reactions



Question 4(a) Write the structures of main products when benzene diazonium chloride reacts with the following reagents :

(i) $\text{H}_3\text{PO}_2 + \text{H}_2\text{O}$ (ii) CuCN/KCN (iii) H_2O

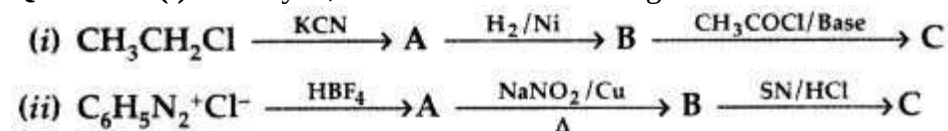
(b) Arrange the following in the increasing order of their basic character in an aqueous solution :

$\text{C}_2\text{H}_5\text{NH}_2$, $(\text{C}_2\text{H}_5)_2\text{NH}$, $(\text{C}_3\text{H}_5)_3\text{N}$

(c) Give a simple chemical test to distinguish between the following pair of compounds :

$\text{C}_6\text{H}_5\text{—NH}_2$ and $\text{C}_6\text{H}_5\text{—NH—CH}_3$

Question 5(i) Identify A, B and C in the following reactions :



(ii) How are the following conversions carried out :

(a) Aniline to p-Hydroxyazobenzene

(b) Ethanoyl chloride to Ethanenitrile.

CHAPTER -10 (BIOMOLECULES)

1(a) Define the following terms:

(i) Glycosidic linkage

(ii) Invert sugar

(iii) Oligosaccharides

(b) What type of linkage is responsible for the formation of proteins?

2.(a) Write the product formed when glucose is treated with HI.

(b) Deficiency of which vitamin causes rickets?

(c) Give an example for each of fibrous protein and globular protein.

(d) Write the product formed on reaction of D-glucose with Br_2 water.

3.(a) Deficiency of which vitamin causes night-blindness?

(b) Name the base that is found in nucleotide of RNA only.

(c) Glucose on reaction with HI gives n-hexane. What does it suggest about the structure of glucose?

(d) How are nucleosides different from nucleotides?

4.(a) What are the different types of RNA found in cells of organisms? State the functions of each type.

(b) What are essential and non-essential amino acids? Give two examples of each type.

(c) What are the hydrolysis products of sucrose?

5. Name the only vitamin which can be synthesized in our body. Name one disease that is caused due to the deficiency of this vitamin.

(b) State two functions of carbohydrates.

(c) Write any two reactions of glucose which cannot be explained by the open chain structure of glucose molecule.

AUTUMN BREAK HOLIDAY HOMEWORK (2026-27)
CLASS XII – CS

Instructions:

- **Do the homework in the Homework side of the notebook**
- **Take a print-out of the homework and paste it in the HW side**

1. (a) Write a Python function that displays all the lines containing the word 'vote' from a text file "Elections.txt". For
(b) Write a Python function that counts and returns the number of digits appearing in the text file "Space.txt".
2. Suman is an intern at a software startup. The company has assigned her a task to create a CSV file named CLUB.CSV, to store the records of the Club members. After discussing with Club Incharge, Suman has planned to store the following content of members in the file CLUB.CSV:

```
[Mno, Name, Mobile, Fee]
```

Where: Mno – Member Number; Name – Name of the Member; Mobile – Member's Mobile Number; Fee – Fee amount.

Assuming you are asked to help Suman in her assignment, write a Python code for performing the following tasks with the help of user-defined functions:

NewMembers(): to accept records of members from the user and add them to the file CLUB.CSV.

PriorityMember(): to find and display those members from the file CLUB.CSV, who are paying Fee more than 35000.

3. A file, PASSENGERS.DAT, stores the records of passengers using the following structure:

```
[PNR, PName, BRDSTN, DESTN, FARE]
```

where: PNR – Passenger Number (string type); PName – Passenger Name (string type); BRDSTN – Boarding Station Name (string type); DESTN – Destination Station Name (string type); FARE – Fare amount for the journey (float type)

Write user defined functions in Python for the following tasks:

(i) Create() – to input data for passengers and write it in the binary file PASSENGERS.DAT.

(ii) SearchDestn(D) – to read contents from the file PASSENGERS.DAT and display the details of those Passengers whose DESTN matches with the value of D.

(iii) UpdateFare() – to increase the fare of all passengers by 5% and rewrite the updated records into the file PASSENGERS.DAT.

4. Write the following user-defined functions in Python:

(I) push_vowels(S, St): Here S is a string and St is a list representing a stack. The function should push all the vowels of the string S onto the stack St. For example, if the string S is "Easy Concepts", then the function push_vowels() should push the elements 'E', 'a', 'o', 'e' onto the stack.

(II) pop_one(St): The function should pop an element from the stack St, and return this element. If the stack is empty, then the function should display the message 'Stack Underflow', and return None.

(III) display_all(St): The function should display all the elements of the stack St, without deleting them. If the stack is empty, the function should display the message 'Empty Stack'.

5. 'CKNG Auto' is a big car-selling agency having its Head Office in Delhi. It is planning to set up a new branch in Patiala. The Patiala branch will have four blocks – ADMIN, SALES, SERVICE and INSURANCE. You, as a network expert, need to suggest the best network-related solutions for them to resolve the issues/problems mentioned in points (I) to (V), keeping the following parameters in mind.

Block to Block distances (in Metres)

From	To	Distance
ADMIN	SALES	70 m
ADMIN	SERVICE	60 m
ADMIN	INSURANCE	65 m
SALES	SERVICE	80 m
SALES	INSURANCE	100 m
SERVICE	INSURANCE	60 m

Distance of Delhi Head Office from Patiala branch = 250 km

Number of Computers in each block is as follows:

Block	No. of Computers
ADMIN	18
SALES	30
SERVICE	20
INSURANCE	10

- (I) Suggest the most appropriate location of the server inside the Patiala branch. Justify your choice.
- (II) What kind of network (PAN/LAN/MAN/WAN) will be formed by interconnecting all the computers inside a block?
- (III) Draw the most effective cable layout to connect all four blocks of Patiala branch.
- (IV) Which device should be used to provide Internet connection to all the computers in the Patiala branch?
- (V) (a) Which is the best wired medium to connect server of Patiala office to the head office at Delhi?

OR

- (b) Is there a need for repeater(s) in Patiala branch? Why, or why not?

6. Consider the table STAFF given below:

STAFF_ID	STAFF_NAME	SALARY	DEPARTMENT	DESIGNATION
S101	SUNITA	26000	MATHS	TGT
S201	SUNIL	80000	COMMERCE	PGT
S301	NEHA	35000	SCIENCE	TGT
S102	MANJEET	25000	MATHS	TGT
S202	MANNAN	45000	COMPUTER	TGT

(a) Write the suitable SQL queries to perform the following tasks:

(I) To display the average salary of each department.

(II) To insert the following record in the table, STAFF: STAFF_ID: S333, STAFF_NAME: GURMEET, SALARY: 15000, DEPARTMENT: ADMIN, DESIGNATION: CLERK

(III) To display the unique designations from the table.

(IV) To display all the details of the staff whose name is of four letters.

(b) Write the output for the queries given below:

```
(I) SELECT STAFF_NAME FROM STAFF
    WHERE SALARY BETWEEN 25000 AND 30000;
(II) SELECT * FROM STAFF WHERE DEPARTMENT =
    "MATHS" AND SALARY > 25000;
(III) SELECT STAFF_NAME, STAFF_ID FROM STAFF WHERE
    DEPARTMENT LIKE "%S";
(IV) SELECT MAX(SALARY) FROM STAFF;
```

7. Peter has created a table named Account in MySQL database, SCHOOL, having following structure:

Stud_id – integer; Sname – string; Class – string; Fees – float

Help him in writing a Python program to display records of those students whose fees is less than 5000.

Note the following to establish connectivity between Python and MySQL: Username – admin; Password – root; Host – localhost

8. Assume that you are working for ABC Corporation (ABCC). ABCC allots contracts to different contractors for some of its works. The data of Contracts and Contractors are kept in the tables Work and Contractor respectively. Following are a few records from these two tables of ABCC's database.

W_ID	C_ID	W_Name	W_Amt
P0001	C_01	Painting	20000
E0001	C_01	Electrical	50000
D0001	C_02	Dumping	10000

Table: Contractor

C_ID	C_Name	Phone	email
C_01	M. Khan & Sons	1232311	MK@xyz.com
C_02	Acharya Pvt. Ltd.	2323311	APL@xyz.com
C_03	Charu Corp.	NULL	CCP@pqr.xyz

Note: The tables contain many more records than shown here.

As an employee of ABCC, you are required to write the SQL queries for the following:

(I) To display all the records from the Work table in alphabetical order of W_Name.

(II) To display the names of contractors where W_Amt is more than 15000.

(III) To display the structure of Work table.

(IV) (a) To count total number of records present in Work table.

(b) To delete the records of contractors whose phone number is not known.

PM SHRI KENDRIYA VIDYALAYA SRIKAKULAM

AUTUMN BREAK HOLIDAY HOMEWORK – 2026

Class XII | Artificial Intelligence (AI – 843)

Part A: Employability Skills

1. Differentiate between verbal, non-verbal and written communication with suitable examples.
2. Describe any four barriers to communication and suggest ways to overcome them.
3. Explain the importance of self-awareness, self-motivation and self-regulation.
4. What is stress? Explain any four practical techniques for managing stress.
5. Explain SMART goals and time-management strategies with suitable examples.
6. Explain how entrepreneurs identify business opportunities and contribute to economic development.
7. Explain the 3Rs — Reduce, Reuse and Recycle — with suitable examples.

Part B: Subject-Specific Skills – Artificial Intelligence

Q1. Data Science Methodology

- Explain the major stages of a data science methodology, from understanding the problem to communicating results.
- A school wants to identify students who may need additional academic support. Identify the problem, data required, possible analysis, and how the results could be evaluated responsibly.

Q2. Making Machines See – Computer Vision

- Explain image classification, object detection and image segmentation with examples.
- Describe the main steps involved in developing an image-classification model, including data collection, labelling, training and evaluation.

Q3. Big Data Analytics and Neural Networks

- What is Big Data? Explain the 5 Vs of Big Data with examples.
- Explain the basic structure of an artificial neural network and describe the roles of input, hidden and output layers.

Series : AAB3/1



SET-1

प्रश्न-पत्र कोड 57/1/1
Q.P. Code

रोल नं.

Roll No.

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परीक्षार्थी प्रश्न-पत्र कोड को उत्तर-पुस्तिका के मुख-पृष्ठ पर अवश्य लिखें।

Candidates must write the Q.P. Code on the title page of the answer-book.

- कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 12 हैं।
- प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को छात्र उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें।
- कृपया जाँच कर लें कि इस प्रश्न-पत्र में 13 प्रश्न हैं।
- कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें।
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न-पत्र का वितरण पूर्वाह्न में 10.15 बजे किया जाएगा। 10.15 बजे से 10.30 बजे तक छात्र केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।
- Please check that this question paper contains 12 printed pages.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 13 questions.
- **Please write down the Serial Number of the question in the answer-book before attempting it.**
- 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the candidates will read the question paper only and will not write any answer on the answer-book during this period.



जीव विज्ञान (सैद्धांतिक) BIOLOGY (Theory)

निर्धारित समय : 2 घण्टे

Time allowed : 2 hours

अधिकतम अंक : 35

Maximum Marks : 35

57/1/1

280A

1

P.T.O.

सामान्य निर्देश :

- (i) इस प्रश्न-पत्र में 13 प्रश्न हैं। सभी प्रश्न अनिवार्य हैं।
- (ii) प्रश्न-पत्र में तीन खंड हैं – खंड अ, ब और स हैं।
- (iii) खंड – अ में 6 प्रश्न हैं, प्रत्येक के 2 अंक हैं। खंड – ब में 6 प्रश्न हैं, जिसमें प्रत्येक प्रश्न के 3 अंक हैं तथा खंड – स में एक प्रकरण आधारित प्रश्न है जिसका मान 5 अंक है।
- (iv) सामान्यतः कोई विकल्प नहीं है। परन्तु कुछ प्रश्नों में अंतर्निहित विकल्प दिए गए हैं। ऐसे प्रश्नों में विद्यार्थी को केवल एक विकल्प का ही उत्तर लिखना है।
- (v) जहाँ आवश्यक हो, वहाँ स्वच्छ, आनुपातिक तथा नामांकित चित्र बनाइए।

*

खंड – अ

1. न्यूमोनिया तथा सामान्य सर्दी-जुकाम से मानव शरीर के प्रभावित होने वाले भागों का उल्लेख कीजिए। इन दो रोगों के रोगकारक के नाम लिखिए। 2
2. वाहितमल के जैविक उपचार के दौरान वायुवीय टैंकों में वाहितमल को यांत्रिक रूप से लगातार हिलाने तथा इसमें वायु को पंप करने के प्रभाव का वर्णन कीजिए। 2

अथवा

- (क) घरेलू ईंधन के उत्पादन में मवेशियों के अपशिष्ट महत्वपूर्ण स्रोत हैं। इससे बनने वाले ईंधन का नाम लिखकर इसके प्रमुख घटकों के नाम लिखिए।
 - (ख) उस जैविक प्रक्रम का नाम लिखिए जो इस ईंधन के उत्पादन के लिए उत्तरदायी है।
3. (क) विषाणु जैवनियंत्रण कारक का एक उदाहरण लिखिए।
(ख) किसी पारिस्थितिक सुग्राही क्षेत्र के उपचार के लिए उन्हें वांछनीय क्यों माना जाता है ? 2
 4. मलेरिया परजीवी प्लैज्मोडियम के जीवन में मादा एनोफेलीज मच्छर का क्या महत्व है ? 2



General Instructions :

- (i) This question paper contains **13** questions. All questions are compulsory.
- (ii) The question paper has **three** Sections – **Section A, B and C**.
- (iii) **Section – A** has **6** questions of **2** marks each. **Section – B** has **6** questions of **3** marks each, and **Section – C** has a case-based question of **5** marks.
- (iv) There is no overall choice. However, internal choices have been provided in some questions. A candidate has to attempt **only one** of the alternatives in such questions.
- (v) Wherever necessary, neat and properly labelled diagrams should be drawn.

SECTION – A

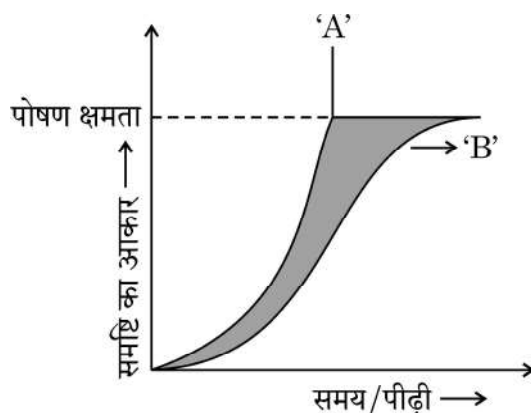
- 1. Mention the parts of human body that get affected by Pneumonia and common cold infections. Write the causative agents of the two diseases. **2**
- 2. State the impact of constant mechanical agitation and pumping of air in the aeration tank on the sewage during the biological treatment. **2**

OR

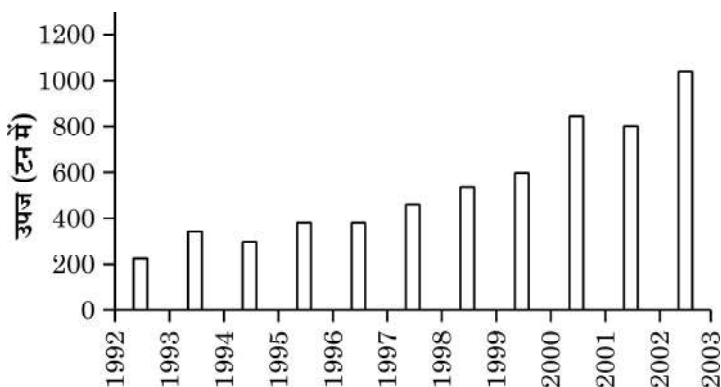
- (a) Cattle excreta is important source for producing a domestic fuel. Name the fuel and write its main components.
- (b) Write the biological process that is responsible for the production of this fuel.
- 3. (a) Give an example of viral biocontrol agent.
- (b) Why are they considered to be desirable when an ecologically sensitive area is being treated ? **2**
- 4. What is the importance of female *Anopheles* mosquitoes in the life of a malarial Parasite *Plasmodium* ? **2**



5. नीचे दिए गए ग्राफ में समष्टि वृद्धि वक्र 'A' तथा 'B' को दर्शाया गया है। इसका अध्ययन करके संबंधित निम्नलिखित प्रश्नों के उत्तर लिखिए :



- (क) वक्र 'B' के संदर्भ में पोषण क्षमता किसका द्योतक है ?
 (ख) उन संभावित प्राकृतिक बलों के प्रभाव का उल्लेख कीजिए जिसके कारण वक्र 'B' बना।
6. नीचे दिए गए दंड ग्राफ (हिस्टोग्राम) में ऑस्ट्रेलिया के क्वींसलैंड के पूर्वी-तट पर अवस्थित ग्रेट बैरियर रीफ/कोरल रीफ से शार्क के वार्षिक उपज के आँकड़ों को दर्शाया गया है। दंड ग्राफ का अध्ययन करके संबंधित निम्नलिखित प्रश्नों के उत्तर लिखिए :



स्रोत : Fijisharkdiving.blogspot.com

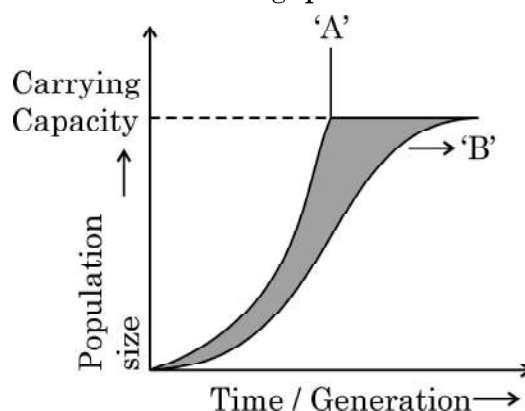
- (क) दिए गए आँकड़ों का अर्थ निर्वचन कीजिए।
 (ख) दिए गए आँकड़ों के आधार पर उस क्षेत्र की जैव-विविधता पर पड़ने वाले प्रभाव की व्याख्या कीजिए।

अथवा

“किसी समुदाय का स्थायित्व उसकी जातीय समृद्धि पर निर्भर करता है।” डेविड टिलमैन ने प्रयोग द्वारा इसे किस प्रकार दर्शाया ?



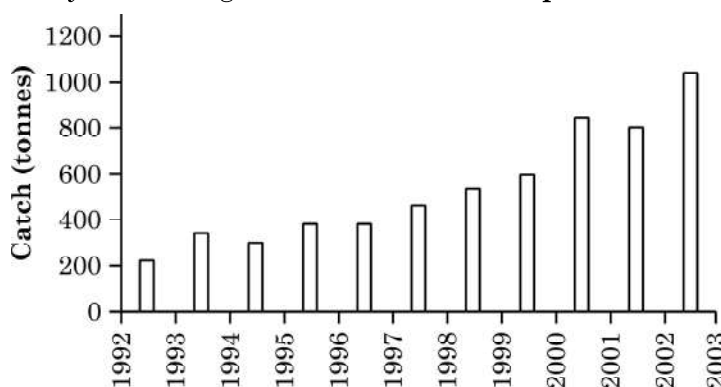
5. Study the graph given below, showing the population growth curves 'A' and 'B' respectively. Answer the following questions :



- (a) What is 'Carrying Capacity' in respect of Curve 'B' indicative of ?
 (b) Mention the action of possible natural forces that could have lead to curve 'B'.

2

6. The histogram given below representing the data for annual shark harvest in the great barrier reef / coral reef located on the east coast of Queensland, Australia. Study the histogram and answer the questions that follow.



Source : Fijisharkdiving.blogspot.com

- (a) Write your interpretation of the data given.
 (b) Write the impact on the biodiversity of the area that you can interpret on the basis of given data.

2

OR

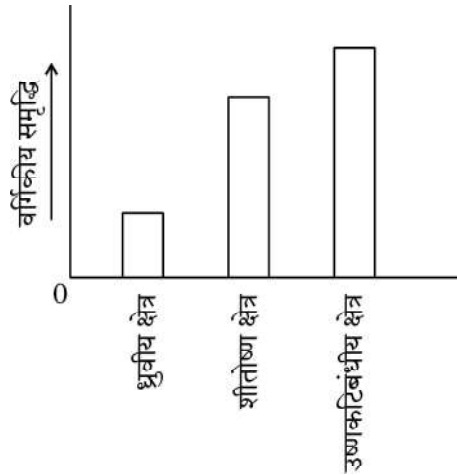
"Stability of community depends upon its species richness." How did David Tilman show this experimentally ?



खंड – ब

7. विश्व के तीन विभिन्न जलवायु वाले क्षेत्रों से स्तनधारियों के समूह की जातीय समृद्धि के सर्वेक्षण के आधार पर संग्रहित आँकड़ों को दंड ग्राफ द्वारा नीचे दर्शाया गया है।

पनामा में स्तनधारियों की लगभग 560 प्रजातियाँ हैं, कनाडा में स्तनधारियों की लगभग 301 प्रजातियाँ हैं तथा डेनमार्क में स्तनधारियों की लगभग 67 प्रजातियाँ हैं।



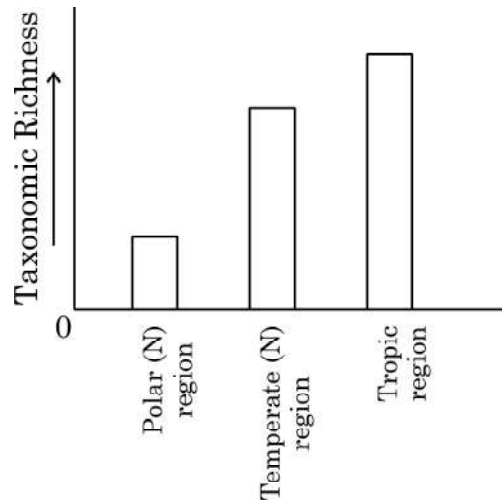
- (क) जातीय (स्पीशीज) समृद्धि के आधार पर इन देशों के संबद्ध जलवायु क्षेत्रों को पहचान कर लिखिए।
 (ख) विश्वभर में पौधों एवं जन्तुओं की जैव-विविधता का प्रतिरूप (पैटर्न) एकसमान नहीं होता। इस प्रकार की जैव-विविधता का नाम लिखिए तथा यह भी बताइए कि ऐसा क्यों होता है ? 3
8. जीवों में जैवविविधता का प्रारंभ लगभग 3 बिलियन वर्ष पहले हुआ था। तब से आज तक पृथ्वी पर नई-नई जातियों का विकास (उद्भव) हो रहा है और साथ ही साथ इनका व्यापक सामूहिक विलोपन भी हो रहा है।
 (क) पृथ्वी पर व्यापक विलोपन की कितनी परिघटनाएँ घट चुकी हैं तथा वर्तमान काल में कौन सा विलोपन प्रगति पर है ?
 (ख) विलोपन की वर्तमान परिघटना पहली परिघटनाओं से किस प्रकार भिन्न है और क्यों ? व्याख्या कीजिए। 3
9. प्राकृतिक रूप से पाये जाने वाले ऐसे स्रोत का नाम लिखिए जो पादप कोशिकाओं में उपयोगी रोगकारक जीन को स्थानांतरित कर सकता है। इसी प्रकार एक अन्य स्रोत का नाम लिखिए जिसका उपयोग मानव के लाभ के लिए प्राणीकोशिका में रोगकारक जीन के स्थानांतरण के लिए किया जाता है। मानव जाति के लाभ के लिए जैव-वैज्ञानिक इन प्राकृतिक स्रोतों का उपयोग किस प्रकार कर रहे हैं ? 3
10. प्रत्येक के एक-एक समुचित उदाहरण का उल्लेख करते हुए जैव-उर्वरकों के मुख्य स्रोतों का वर्णन कीजिए। 3



SECTION – B

7. The data collected based on the survey conducted for species richness of group of mammals, in three different climatic regions of the world is shown in the bar graph given below.

Panama has nearly 560 species of mammals, Canada has nearly 301 species of mammals and Denmark has 67 species of mammals.



- (i) Based on the species, richness, identify the location of these countries in the respective climatic regions given.
- (ii) Plants and animals do not have a uniform diversity in the world. Write the term given to this pattern of diversity and why ? 3
8. Bio-diversification of life started to occur almost 3 billion years ago. Since then new species have been evolving and then disappearing en masse from earth.
- (a) How many episodes of mass extinctions of species have already taken place and which one is in progress in the current era ?
- (b) How is current episode in progress different from the previous episodes and why ? Explain. 3
9. Name two naturally occurring sources, one that transfers pathogenic genes into a plant cells and the other into an animal cell respectively, for their benefit. Write how have these naturally occurring sources been used for the benefit of human race by the biotechnologists. 3
10. Enumerate the main sources of bio-fertilisers giving one example of each. 3



11. “जैव-विविधता फसल पौधों के स्वास्थ्य को सुदृढ़ (मजबूत) बनाते हैं।” कारण सहित कथन की व्याख्या कीजिए तथा एक कार्य योजना प्रस्तुत कीजिए जिससे जैव खेती करने वाले किसानों की मुख्य धारणा (विश्वास) का समर्थन होता हो।

3

12. (क) r-डीएनए तकनीक में वरणयोग्य चिह्नक की भूमिका का वर्णन कीजिए।
 (ख) ई. कोलाई के लिए उपयोगी माने जाने वाले ऐसे ही एक वरणयोग्य चिह्नक का नाम लिखिए।
 (ग) एक कारण लिखिए कि इसे लाभकारी वरणयोग्य चिह्नक क्यों माना जाता है।

3

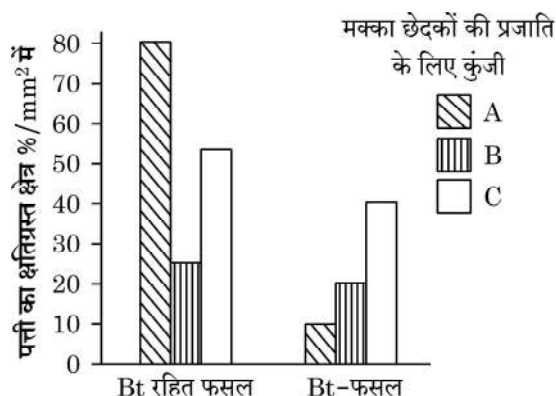
अथवा

प्लैज्मिड क्या हैं ? यह क्लोनिंग संवाहकों से किस प्रकार भिन्न हैं। क्लोनिंग संवाहक के एक विषाणु संवाहक तथा एक जीवाणु संवाहक का नाम लिखिए।

खंड – स

(प्रकरण आधारित)

13. विभिन्न कीट पीड़कों के आक्रमण से फसली पौधों की सुरक्षा के लिए जैव प्रौद्योगिकी वैज्ञानिकों ने अनेक पीड़करोधी पौधों को विकसित किया है। Bt-मक्का का पौधा ऐसा ही एक उदाहरण है। इस पौधे में ‘क्राई’ ‘जीन’ प्रविष्ट कराया गया जो पौधों में ‘क्राई-प्रोटीन’ का निर्माण करता है जो पीड़क (मक्का छेदक/कार्न बोरर) पर मारक प्रभाव डालता है। यह मक्का के पौधे की मक्का छेदक नाम पीड़क से सुरक्षा करता है। Bt-मक्का का मक्का छेदक पीड़क पर प्रभाव क्षमता के परीक्षण हेतु वैज्ञानिकों ने एक परीक्षणार्थ क्षेत्र अध्ययन किया। तीन विभिन्न प्रकार के मक्का छेदकों यथा ‘A’, ‘B’ तथा ‘C’ को एकत्र करके उन्हें Bt-मक्का पौधे तथा Bt-रहित (सामान्य) मक्का के पौधों के अलग-अलग खेतों में डाल दिया गया। पौधों की पत्तियों को हुई क्षति का प्रेक्षण कर क्षति का आंकलन किया गया और नोट किया। प्रेक्षणों तथा एकत्र किए आँकड़ों के आधार पर नीचे दिया गया दंड ग्राफ बनाया गया। ग्राफ का अध्ययन करके संबंधित निम्नलिखित प्रश्नों के उत्तर लिखिए :



11. Explain giving reason the action plan followed by organic farmers that support their key belief “biodiversity furthers health of crop lands”. 3

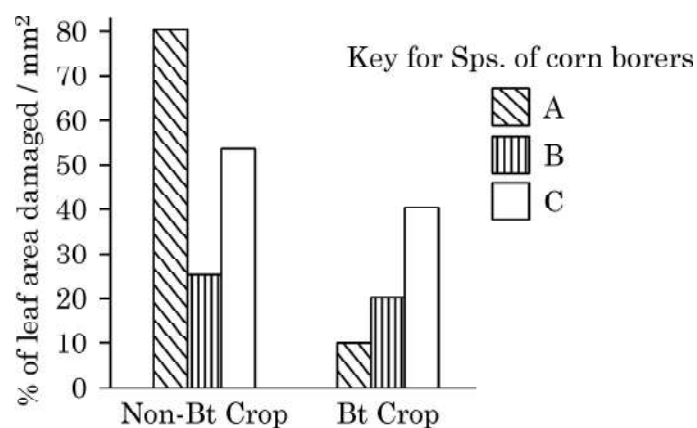
12. (i) State the role of a selectable marker in r-DNA technology.
(ii) Name one such selectable marker which is considered to be useful for E.coli.
(iii) Give one reason why is it considered to be a useful marker. 3

OR

What are plasmids ? How are they different from cloning vectors ? Give one example each for a viral and a bacterial cloning vector.

SECTION – C
(Case Based)

13. To save the crop plant from the attack of various insect pests the biotechnologists have developed many pest resistant plants. One such example is Bt corn plant. In this plant ‘cry’ genes were introduced which produces cry-proteins in the plant that has toxic effect on the pest (corn borer). Thus saves the corn plant from the attack of the corn borer. An experimental field study was conducted by the scientists to see the efficacy of the Bt corn plant against the attack of corn borers. Three different species of corn borers namely ‘A’, ‘B’, ‘C’ were collected and were independently fed on non Bt corn plants and Bt corn plants separately for the same period. The extent of the damage caused to the leaf area of the plant was observed and noted down. With the help of the observations and data collected the following bar graph was plotted. Study the graph and answer the questions that follow.



-
- (क) उस मक्का छेदक की पहचान कीजिए जिसका Bt-मक्का पादप द्वारा सर्वाधिक सफल नियंत्रण किया गया। अपने निष्कर्ष की पुष्टि हेतु समुचित कारण भी दीजिए।
- (ख) उस मक्का छेदक की स्पीशीज़ की पहचान कीजिए जिस पर Bt जीनों द्वारा उत्पन्न आविष का न्यूनतम प्रभाव पड़ा।
- (ग) एक वैज्ञानिक के रूप में आप कर्न बोरे (मक्का छेदक) की 'B-स्पीशीज़' से आक्रांत क्षेत्र में Bt-मक्का किस्म को उगाने के लिए क्या सलाह देंगे ?
- (घ) एक Bt-जीन का नाम लिखिए जो मक्का छेदकों के नियंत्रण हेतु प्रोटीन का कूटलेखन करता है।

5

अथवा

एक अनुसंधानकर्ता ने प्रयोगशाला में काम करते हुए एक कवक की पहचान (खोज) की जिसे कृषि के क्षेत्र में अत्यंत महत्वपूर्ण माना जाता था। एक जैव प्रौद्योगिकी के विद्यार्थी के रूप में आप निम्न के लिए किन चरणों को अपनाने की सलाह देंगे ?

- (क) कवक से इस वांछित जीन को पृथक् करना।
- (ख) आगामी प्रयोगों तथा शोध कार्य हेतु इस जीन का प्रवर्धन करना।



-
- (i) Identify the species of the corn borer that was most successfully controlled by Bt corn plant. Give appropriate reason for your inference.
 - (ii) Identify the species of the corn borers which shows least impact of toxin produced by Bt genes.
 - (iii) What would be your advise as a Scientist, to the farmers for growing this particular Bt corn variety in the area which is infested by species-‘B’ of corn borers ?
 - (iv) Name one Bt gene that encodes protein in corn plants to control corn borers.

5

OR

A gene was identified in a fungus by a research worker in a lab which was considered to be of a great importance in the field of agriculture. As a student of biotechnology, write the steps you would suggest to (i) Isolate this gene of interest from the fungus and (ii) amplify this gene for further experimentation and research.



*

57/1/1

280A

12





Series EF1GH/5



SET~3

रोल नं. Roll No.							

प्रश्न-पत्र कोड
Q.P. Code **57/5/3**

परीक्षार्थी प्रश्न-पत्र कोड को उत्तर-पुस्तिका के मुख-पृष्ठ पर अवश्य लिखें।

Candidates must write the Q.P. Code on the title page of the answer-book.

जीव विज्ञान (सैद्धान्तिक) BIOLOGY (Theory)

निर्धारित समय : 3 घण्टे

अधिकतम अंक : 70

Time allowed : 3 hours

Maximum Marks : 70

नोट / NOTE :

- कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 23 हैं।
Please check that this question paper contains 23 printed pages.
- प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को परीक्षार्थी उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें।
Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- कृपया जाँच कर लें कि इस प्रश्न-पत्र में 33 प्रश्न हैं।
Please check that this question paper contains 33 questions.
- कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें।
Please write down the serial number of the question in the answer-book before attempting it.
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न-पत्र का वितरण पूर्वाह्न में 10.15 बजे किया जाएगा। 10.15 बजे से 10.30 बजे तक परीक्षार्थी केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।
15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the candidates will read the question paper only and will not write any answer on the answer-book during this period.



57/5/3

274 C



Page 1

P.T.O.



सामान्य निर्देश :

निम्नलिखित निर्देशों को बहुत सावधानी से पढ़िए और उनका पालन कीजिए :

- (i) इस प्रश्न-पत्र में 33 प्रश्न हैं। सभी प्रश्न अनिवार्य हैं।
- (ii) प्रश्न-पत्र पाँच खण्डों में विभाजित है – खण्ड क, ख, ग, घ तथा ङ
- (iii) खण्ड – क में प्रश्न संख्या 1 से 16 तक बहुविकल्पीय प्रकार के एक-एक अंक के प्रश्न हैं।
- (iv) खण्ड – ख में प्रश्न संख्या 17 से 21 तक अति लघु-उत्तरीय प्रकार के दो-दो अंकों के प्रश्न हैं।
- (v) खण्ड – ग में प्रश्न संख्या 22 से 28 तक लघु-उत्तरीय प्रकार के तीन-तीन अंकों के प्रश्न हैं।
- (vi) खण्ड – घ में प्रश्न संख्या 29 तथा 30 केस आधारित चार-चार अंकों के प्रश्न हैं। प्रत्येक प्रश्न में उपप्रश्न हैं तथा एक उपप्रश्न में आंतरिक विकल्प दिया गया है।
- (vii) खण्ड – ङ में प्रश्न संख्या 31 से 33 तक दीर्घ-उत्तरीय प्रकार के पाँच-पाँच अंकों के प्रश्न हैं।
- (viii) प्रश्न-पत्र में समग्र विकल्प नहीं दिया गया है। यद्यपि, खण्ड ख के 1 प्रश्न में, खण्ड ग के 1 प्रश्न में, खण्ड घ के 2 प्रश्नों में तथा खण्ड ङ के 1 प्रश्न में आंतरिक विकल्प का प्रावधान दिया गया है। परीक्षार्थी को इन प्रश्नों में से किसी एक प्रश्न का उत्तर लिखना है।
- (ix) जहाँ कहीं आवश्यक हो, साफ सुथरे और उचित रूप से नामांकित चित्र बनाए जाने चाहिए।





General Instructions :

Read the following instructions very carefully and strictly follow them :

- (i) *This question paper contains **33** questions. **All** questions are compulsory.*
- (ii) *Question paper is divided into **FIVE** sections - Section A, B, C, D and E.*
- (iii) *In Section **A** - question number **1** to **16** are Multiple Choice (MCQ) type questions carrying **1** mark each.*
- (iv) *In Section **B** - question number **17** to **21** are Very Short Answer (VSA) type questions carrying **2** marks each.*
- (v) *In Section **C** - question number **22** to **28** are Short Answer (SA) type questions carrying **3** marks each.*
- (vi) *In Section **D** - question number **29** and **30** are case-based questions carrying 4 marks each. Each question has subparts with internal choice in one subpart.*
- (vii) *In Section **E** - question number **31** to **33** are Long Answer (LA) type questions carrying **5** marks each.*
- (viii) *There is no overall choice. However, an internal choice has been provided in **1** question in Section **B**, 1 question in Section **C**, 2 questions in Section **D** and 1 question in Section **E**. A candidate has to attempt only **one** of the alternatives in such questions.*
- (ix) *Wherever necessary, neat and properly labelled diagrams should be drawn.*



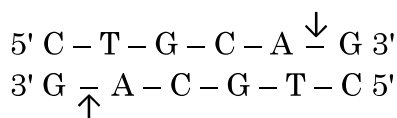


खण्ड – क

- उस विकल्प का चयन कीजिए जिसमें रोगजनक का उसके द्वारा जनित रोग के अभिलक्षणों से गलत मिलान किया गया है 1
 - एंटांमीबा हिस्टोलिटिका: कोष्ठबद्धता, उदरीय पीड़ा
 - एपिडर्मोफाइटॉन: नाखून पर सूखी शल्की विक्षतियाँ (स्केली लीजन)
 - वुचैरेरिया बैक्रोफ्टाई: अर्धपाद की लसीका वाहिकाओं में दीर्घकालक शोथ
 - हीमोफिल्स इंप्लुएँजी: आंत्र का अवरोध
- समष्टि के कुछ ऐसे महत्त्वपूर्ण गुण जो व्यक्ति जीव के लिए महत्त्वपूर्ण नहीं होते, वह हैं : 1
 - जन्म दर तथा मृत्यु दर
 - नर तथा मादा
 - जन्म तथा मृत्यु
 - लिंगानुपात

निम्नलिखित विकल्पों में से सही विकल्प चुनिए :

 - केवल (i)
 - केवल (ii)
 - (ii) तथा (iii)
 - (i) तथा (iv)
- अनेक अरित्रपाद (कॉपिपोड्स) समुद्री मीन (मछली) के शरीर की सतह पर रहते हैं। जीवों का यह पारस्परिक संबंध कहलाता है - 1
 - सहभोजिता (कमन्सेलिज्म)
 - परजीविता
 - अंतर्जातीय परजीविता (एमेन्सेलिज्म)
 - सहोपकारिता
- नीचे एक प्रतिबंधन एंडोन्यूक्लियेज 'Pst-I' के प्रतिबंधन स्थल तथा डी एन ए अणु पर विदलन-स्थल को दर्शाया गया है : 1



एंजाइम Pst-I की क्रिया के परिणामस्वरूप बनने वाले खंडों को दर्शाने वाले सही विकल्प का चुनाव कीजिए :

- $$\begin{array}{c}
 5' \text{ C - T - G } \qquad \qquad \text{C - A - G } 3' \\
 3' \text{ G - A - C - G - T } \qquad \qquad \text{C } 5'
 \end{array}$$
- $$\begin{array}{c}
 5' \text{ C - T } \qquad \qquad \text{G - C - A - G } 3' \\
 3' \text{ G - A - G - C } \qquad \qquad \text{T - C } 5'
 \end{array}$$
- $$\begin{array}{c}
 5' \text{ C - T - G - C } \qquad \text{A - G } 3' \\
 3' \text{ G - A - C - G } \qquad \text{T - C } 5'
 \end{array}$$
- $$\begin{array}{c}
 5' \text{ C - T - G - C - A } \qquad \qquad \qquad \text{G } 3' \\
 3' \text{ G } \qquad \qquad \qquad \text{A - C - G - T - C } 5'
 \end{array}$$





SECTION – A

1. Select the pathogen mismatched with the symptoms of disease caused by it from the list given below : 1
- (a) *Entamoeba histolytica* : Constipation, abdominal pain.
(b) *Epidermophyton* : Dry scaly lesions on nail.
(c) *Wuchereria bancrofti* : Chronic inflammation of lymphatic vessels of lower limb.
(d) *Haemophilus influenzae* : Blockage of the intestinal passage.
2. Important attributes belonging to a population but not to an individual are : 1
- (i) Birth rate and death rate (ii) Male and female
(iii) Birth and death (iv) Sex-ratio
- Select the correct option from the given options :
- (a) (i) only (b) (ii) only
(c) (ii) and (iii) (d) (i) and (iv)
3. Many copepods live on the body surface of marine fish. This relationship is an example of : 1
- (a) Commensalism (b) Parasitism
(c) Amensalism (d) Mutualism
4. Given below is the restriction site of a restriction endonuclease Pst-I and the cleavage sites on a DNA molecule. 1
- 5' C – T – G – C – A $\downarrow$ G 3'
3' G $\uparrow$ A – C – G – T – C 5'
- Choose the option that gives the correct resultant fragments by the action of the enzyme Pst-I.
- (a) 5' C – T – G C – A – G 3'
3' G – A – C – G – T C 5'
- (b) 5' C – T G – C – A – G 3'
3' G – A – G – C T – C 5'
- (c) 5' C – T – G – C A – G 3'
3' G – A – C – G T – C 5'
- (d) 5' C – T – G – C – A G 3'
3' G A – C – G – T – C 5'





5. नीचे एक जीवाणु कोशिका के एम आर एन ए (mRNA) में क्षारकों के अनुक्रम को दर्शाया गया है । स्थानांतरण के दौरान '3' पर अवस्थित प्रकूट तथा '5' पर अवस्थित प्रकूट पर निगमित एमीनो-अम्ल होंगे 1

3' AUCAGGUUUGUGAUGGUACGA 5'

- (a) फेनिलएलानिन, मीथियोनीन (b) सिस्टीन, ग्लाइसीन
(c) एलानिन, प्रोलीन (d) सेरीन, वेलीन

6. मानव स्तन ग्रंथि का विस्तृत संरचनात्मक विवरण निम्न रूप से दिया गया है : 1

- (i) स्तन में ग्रंथिल ऊतक की 15-20 पालियाँ होती हैं जिन्हें कूपिका कहते हैं ।
(ii) कूपिकाओं के ल्यूमेन में दुग्ध भण्डारित होता है ।
(iii) कूपिकाएँ एक दूसरे से मिलकर स्तन वाहिनी का निर्माण करती हैं ।
(iv) स्तन तुंबिका दुग्धवाहिनी (लैक्टिफेरस डक्ट) से जुड़ी होती है ।
उस विकल्प को चुनिए जो मानव स्तन ग्रंथि का सही विवरण है ।

- (a) (i) तथा (ii) (b) (ii) तथा (iii)
(c) (ii) तथा (iv) (d) (i) तथा (iii)

7. व्यावसायिक रूप से महत्वपूर्ण कुछ उत्पादों तथा उनके स्रोत जीवों की सूची नीचे दी गई है । सही मिलान वाले विकल्प को चुनिए : 1

सूची-A		सूची-B	
क्र. सं.	जैव सक्रिय उत्पाद	क्र. सं.	सूक्ष्मजीव (स्रोत जीव)
(A)	साइक्लोस्पोरिन-A	(i)	<u>स्ट्रेप्टोकोकस</u>
(B)	स्टैटिन	(ii)	<u>ट्राइकोडर्मा पॉलीस्पोरम</u>
(C)	स्ट्रेप्टोकाइनेज़	(iii)	<u>पेनिसिलियम नोटेटम</u>
(D)	पेनिसिलिन	(iv)	<u>मोनेस्कस परप्यूरिअस</u>

विकल्प :

- (a) (A)-(i), (B)-(ii), (C)-(iii), (D)-(iv)
(b) (A)-(iii), (B)-(iv), (C)-(ii), (D)-(i)
(c) (A)-(iv), (B)-(iii), (C)-(ii), (D)-(i)
(d) (A)-(ii), (B)-(iv), (C)-(i), (D)-(iii)





5. Given below is a sequence of bases in mRNA of a bacterial cell. Identify the amino acid that would be incorporated at codon position 3 and codon position 5 during the process of its translation. 1

3' AUCAGGUUUGUGAUGGUACGA 5'

- (a) Phenylalanine, Methionine (b) Cysteine, Glycine
(c) Alanine, Proline (d) Serine, Valine
6. Given below are structural details of a human mammary gland : 1
- (i) The glandular tissue in the breast has 15-20 clusters of cells called alveoli.
(ii) The milk is stored in the lumen of alveoli.
(iii) The alveoli join to form the mammary ducts.
(iv) Mammary ampulla is connected to lactiferous ducts.
- Choose the option that gives the correct detail of human mammary gland.
- (a) (i) and (ii) (b) (ii) and (iii)
(c) (ii) and (iv) (d) (i) and (iii)
7. Given below are the list of the commercially important products and their source organisms. Select the option that gives the correct matches. 1

List A		List B	
S. No.	Bioactive Products	S. No.	Microbes (Source Organism)
(A)	Cyclosporin A	(i)	<u>Streptococcus</u>
(B)	Statins	(ii)	<u>Tricoderma polysporum</u>
(C)	Streptokinase	(iii)	<u>Penicillium notatum</u>
(D)	Penicillin	(iv)	<u>Monascus purpureus</u>

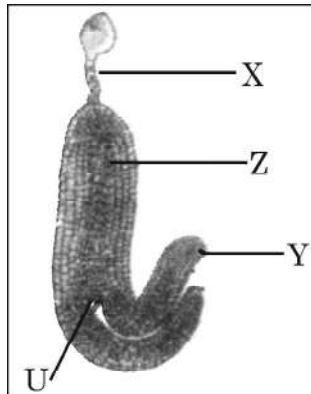
Options :

- (a) (A)-(i), (B)-(ii), (C)-(iii), (D)-(iv)
(b) (A)-(iii), (B)-(iv), (C)-(ii), (D)-(i)
(c) (A)-(iv), (B)-(iii), (C)-(ii), (D)-(i)
(d) (A)-(ii), (B)-(iv), (C)-(i), (D)-(iii)





8. टिटैनस प्रतिआविष (टिटैनस टॉक्सॉइड) का इंजेक्शन जब पीड़ित व्यक्ति को लगाया जाता है तो वह तुरन्त ही निम्न प्रकार की प्रतिरक्षा प्रदान करता है : 1
- (a) सहज प्रतिरक्षा (b) निष्क्रिय प्रतिरक्षा
(c) स्वप्रतिरक्षा (d) सक्रिय प्रतिरक्षा
9. किसी पारितंत्र में प्राथमिक उत्पादकता को निम्न रूप से अभिव्यक्त करते हैं : 1
- (a) $\text{gm}^{-2} \text{yr}^{-1}$ (b) $\text{gm}^{-2} \text{yr}$
(c) $\text{K cal m}^{-2} \text{yr}^{-1}$ (d) K cal m^{-2}
10. उस विकल्प को चुनिए जो चित्र में दिए गए विकासशील द्विबीजपत्री भ्रूण के 'U', 'X', 'Y' तथा 'Z' के पहचाने गए नामांकन को सही रूप में दर्शाता है : 1

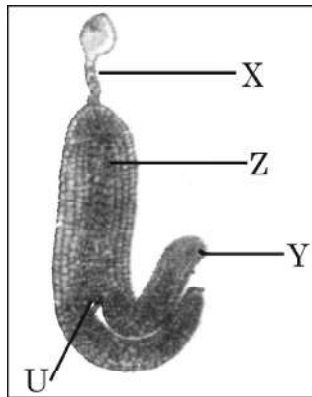


- (a) X – प्रांकुर (2n), Y – निलंबक (n), Z – बीजपत्र (2n), U – मूलांकुर (2n).
(b) X – प्रांकुर (2n), Y – निलंबक (2n), Z – मूलांकुर (2n), U – बीजपत्र (2n).
(c) X – निलंबक (2n), Y – बीजपत्र (2n), Z – मूलांकुर (2n), U – प्रांकुर (2n).
(d) X – बीजपत्र (2n), Y – मूलांकुर (n), Z – प्रांकुर (n), U – निलंबक (n).
11. वर्तमान में हो रहा 'छठा विलोपन' पहले हो चुके सभी विलोपनों से इसलिए भिन्न है क्योंकि यह : 1
- (a) 10-100 गुणा अधिक तीव्र है। (b) 100-1000 गुणा अधिक तीव्र है।
(c) 100-10000 गुणा अधिक तीव्र है। (d) 1000-10000 गुणा अधिक तीव्र है।





8. Tetanus antitoxin (Tetanus toxoid) when injected into the human body it immediately provides : 1
- (a) Innate immunity (b) Passive immunity
(c) Auto immunity (d) Active immunity
9. The primary productivity in an ecosystem is expressed as : 1
- (a) $\text{gm}^{-2} \text{yr}^{-1}$ (b) $\text{gm}^{-2} \text{yr}$
(c) $\text{K cal m}^{-2} \text{yr}^{-1}$ (d) K cal m^{-2}
10. Select the option that shows the correctly identified 'U', 'X', 'Y' and 'Z' in a developing dicot embryo. 1



- (a) X – Plumule (2n), Y – Suspensor (n), Z – Cotyledon (2n), U – Radicle (2n).
(b) X – Plumule (2n), Y – Suspensor (2n), Z – Radicle (2n), U – Cotyledon (2n).
(c) X – Suspensor (2n), Y – Cotyledon (2n), Z – Radicle (2n), U – Plumule (2n).
(d) X – Cotyledon (2n), Y – Radicle (n), Z – Plumule (n), U – Suspensor (n).
11. The sixth extinction in progress currently is different from all previous extinctions on earth as it is : 1
- (a) 10-100 times faster (b) 100-1000 times faster
(c) 100-10000 times faster (d) 1000-10000 times faster





12. विकास की वह अवस्था जिसमें मानव ने अपने शरीर की रक्षा हेतु खालों का उपयोग करना तथा मृतकों को भूमि के अन्दर गाड़ना प्रारंभ किया 1

- (a) होमो हैबिलिस (b) नियंडरथल मानव
(c) जावा मानव (d) होमो इरेक्टस

प्रश्न संख्या 13 से 16 के लिए, दो कथन दिए गए हैं – जिनमें एक को अभिकथन (A) तथा दूसरे को कारण (R) द्वारा अंकित किया गया है। इन प्रश्नों के सही उत्तर नीचे दिए गए कोडों (a), (b), (c) और (d) में से चुनकर दीजिए।

- (a) अभिकथन (A) और कारण (R) दोनों सही हैं और कारण (R), अभिकथन (A) की सही व्याख्या करता है।
(b) अभिकथन (A) और कारण (R) दोनों सही हैं, परन्तु कारण (R), अभिकथन (A) की सही व्याख्या नहीं करता है।
(c) अभिकथन (A) सही है, परन्तु कारण (R) गलत है।
(d) अभिकथन (A) गलत है, परन्तु कारण (R) सही है।
13. अभिकथन (A) : यदि अपरद लिग्निन तथा क्यूटिन से समृद्ध होता है तो अपघटन की गति धीमी होती है।

कारण (R) : अपघटन की अभिक्रिया में मुख्यतः ऑक्सीजन की आवश्यकता होती है। 1

14. अभिकथन (A) : गर्भ में भ्रूण के लिंग का पता लगाकर भ्रूणावस्था में ही अजन्मे शिशु की हत्या करना अवैधानिक कृत्य है।

कारण (R) : उल्बवेधन (ऐम्निओसैंटेसिस) भ्रूण में होने वाले विभिन्न आनुवंशिक विकारों का भी पता लगाने की तकनीक है। 1

15. अभिकथन (A) : थैलेसीमिया में एक जीन के विकार के कारण विकृत मायोग्लोबिन शृंखला संश्लेषित होती है।

कारण (R) : α -थैलेसीमिया क्रोमोसोम 16 पर उपस्थित जीन HBA1 तथा HBA2 द्वारा नियंत्रित होता है। 1

16. अभिकथन (A) : पॉलिमरेज शृंखला अभिक्रिया (पी सी आर) में तापानुशीलन में संश्लेषित अल्प-न्यूक्लियोटाइड बहुलकों का उपयोग किया जाता है।

कारण (R) : उपक्रमक (प्राइमर्स) द्विरज्जुक डी एन ए के पूरक क्षेत्रों से आबंधित हो जाते हैं। 1





12. At which stage during evolution did human use hides to protect their bodies and buried their dead ? 1

- (a) Homo habilis (b) Neanderthal man
(c) Java man (d) Homo erectus

Question Nos. 13 to 16 consists of two statements Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below :

- (a) Both (A) and (R) are true and (R) is the correct explanation of (A).
(b) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(c) (A) is true, but (R) is false.
(d) (A) is false, but (R) is true.

13. **Assertion (A) :** Decomposition process is slower if detritus is rich in lignin and cutin.

Reason (R) : Decomposition is largely an oxygen requiring process. 1

14. **Assertion (A) :** Determining the sex of an unborn child followed by MTP is an illegal practice.

Reason (R) : Amniocentesis is a practice to test the presence of genetic disorders also. 1

15. **Assertion (A) :** In Thalassemia an abnormal myoglobin chain is synthesized due to a gene defect.

Reason (R) : α -Thalassemia is controlled by genes HBA1 and HBA2 on chromosome 16. 1

16. **Assertion (A) :** Synthetic oligonucleotide polymers are used during Annealing in a PCR.

Reason (R) : The primers bind to the double stranded DNA at their complementary regions. 1



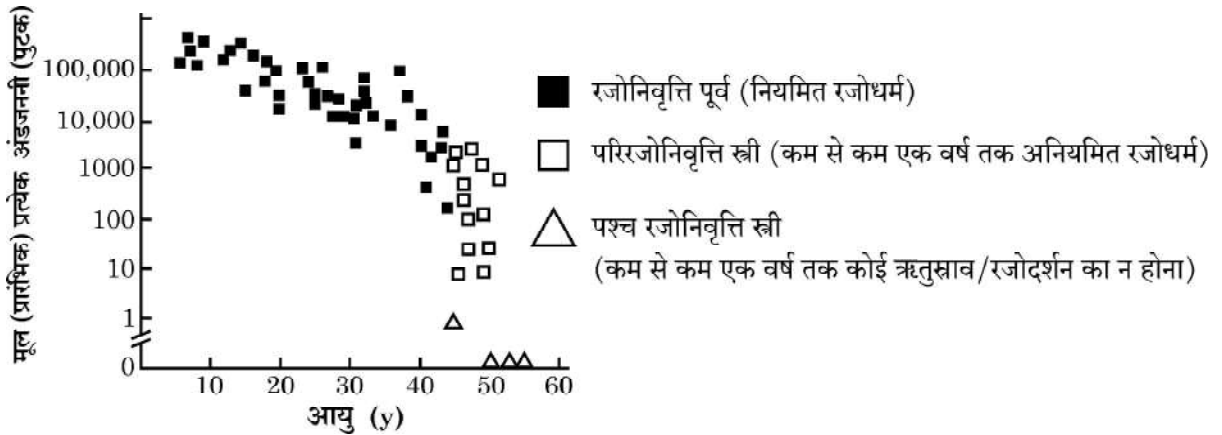


खण्ड – ख

17. (a) (i) एक आनुवंशिकतः रूपांतरित अन्न (अनाज) फसल का नाम लिखिए जो खाद्य पदार्थों के पोषणीय स्तर से समृद्ध हो ।
(ii) पोषक पदार्थ का नाम भी लिखिए जिससे यह समृद्ध है ।
(b) आनुवंशिकतः रूपांतरित फसलों के दो लाभ लिखिए । 2
18. उद्यान मटर के पौधे में फली का हरा रंग (G) पीले रंग की फली (g) पर प्रभावी है । अज्ञात जीनोटाइप वाले पौधे का जीनोटाइप ज्ञात करने के लिए पनेट वर्ग का उपयोग करके परीक्षार्थ संकरण में जीनोटाइप (जीनी प्ररूप) तथा फीनोटाइप (लक्षण प्ररूप) का निरूपण कीजिए । 2
19. (a) सरसों (*ब्रेसिका*) की फसल को तितलियों की इल्ली (लारवा – कैटरपिलर) के आक्रमण से बचाने के लिए एक विशेष प्रकार के जीवाणु के बीजाणुओं के जलीय घोल का छिड़काव किया गया । इस जीवाणु का नाम लिखकर तितली की इल्ली पर इसकी क्रिया के तरीके का उल्लेख कीजिए । 2

अथवा

- (b) इन दिनों कैंसर के उपचार का सबसे अधिक प्रभावी उपाय प्रतिरक्षा चिकित्सा है । इसमें रोगी के प्रतिरक्षा तंत्र को सक्रियित करके अर्बुद को नष्ट किया जाता है ।
(i) प्रतिरक्षा चिकित्सा में उपयोग किए जाने वाले एक जैव अनुक्रिया रूपांतरक का उदाहरण लिखिए ।
(ii) रोगी व्यक्ति को इस प्रकार के पदार्थों की आवश्यकता क्यों होती है, जबकि, शरीर का प्रतिरक्षा तंत्र तो पहले से ही कार्य कर रहा है ?
(iii) 'संस्पर्श संदमन' क्या है ? 2
20. एक महिला की विभिन्न आयु के समय प्रत्येक अंडाशय में मूल (प्रारंभिक) अंडजननी (पुटक) की संख्या को निम्न ग्राफ द्वारा दर्शाया गया है । इस ग्राफ का अध्ययन करके संबंधित प्रश्नों के उत्तर दीजिए ।



- (a) स्त्रियों में रजोनिवृत्ति की औसत आयु क्या है ?
(b) दिए ग्राफ के अनुसार किस आयु में प्रारंभिक (मूल) अंडजननी (पुटक) की संख्या सर्वाधिक होती है ? 1 + 1 = 2



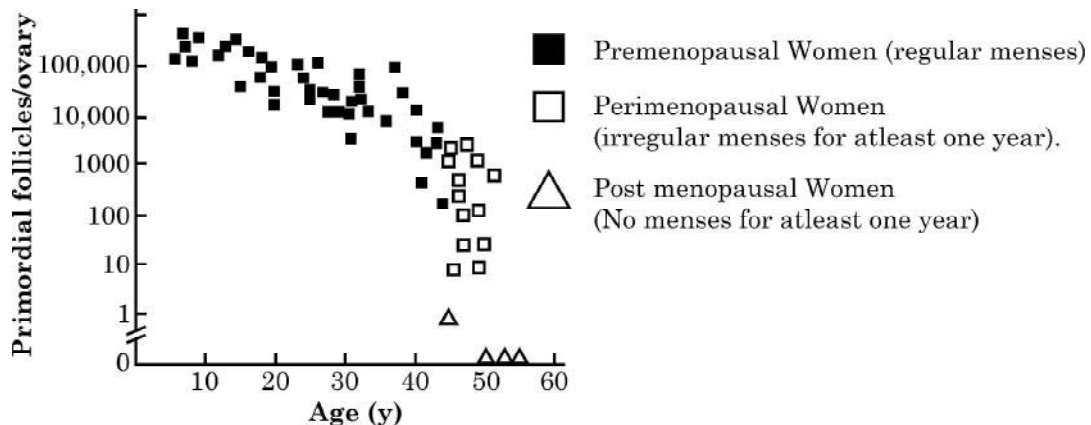


SECTION – B

17. (a) Name (i) a GM cereal crop having enhanced nutritional value, (ii) the nutrient it is rich in.
(b) State any two benefits of Genetically modified crops. 2
18. By using Punnett square depict the genotypes and phenotypes of test crosses (where green pod colour (G) is dominant over yellow pod colour (g)) in Garden pea with unknown genotype. 2
19. (a) Certain specific bacterial spores are mixed in water and sprayed over *Brassica* crop to control butterfly caterpillars.
Name this bacterium and its mode of action on the butterfly caterpillars. 2

OR

- (b) Immunotherapy these days is one of the most efficient way of treatment of cancer. The therapy involved activates the immune system and destroys the tumour.
(i) Write an example of one such biological response modifier used in immunotherapy.
(ii) Why do patients need such substances if immune system is already working in body ?
(iii) State what is 'Contact inhibition'. 2
20. The graph given below shows the number of primordial follicles per ovary in women at different ages. Study the graph and answer the questions that follow.



- (a) What is the average age of the women at the onset of menopause ?
(b) At what age are maximum primordial follicles present in the ovary, according to the given graph ? 1 + 1 = 2





21. “कीटों तथा मेंढकों की कुछ जातियों का विकास कुछ विशेष लक्षणों के साथ हुआ है, जो पहचान छुपाने में उनकी सहायता करते हैं।”

(a) समुचित कारण सहित उपरोक्त कथन की पुष्टि कीजिए।

(b) इस प्रकार के किन्हीं दो लक्षणों का उल्लेख कीजिए।

2

खण्ड – ग

22. (a) “अपने जीवन की निरंतरता बनाए रखने के लिए प्लैज्मोडियम प्रोटोजोआ को मच्छर तथा मानव दोनों ही परपोषियों की आवश्यकता होती है।” व्याख्या कीजिए।

3

अथवा

(b) क्योंकि ‘स्वास्थ्य ही सर्वोत्तम पूँजी (धन) है’, अतः हमें अच्छे स्वास्थ्य को बनाए रखने के लिए प्रयास करने चाहिए। अच्छे स्वास्थ्य को प्राप्त करने के किन्हीं छः उपायों की सूची बनाइए।

3

23. “प्रकृति द्वारा प्रदान की गई जैवविविधता की अनेक पारितंत्र सेवाओं में मुख्य भूमिका है।”

(a) कथन की न्यायसंगतता सिद्ध करने हेतु व्यापक रूप से उपयोगी कोई दो तर्क प्रस्तुत कीजिए।

(b) जैवविविधता को संरक्षित करने के लिए कोई एक नैतिक कारण लिखिए।

3

24. ऐसे एक शल्यचिकित्सीय गर्भ-निरोधक उपाय का नाम लिखकर व्याख्या कीजिए जिसको युगल का नर सदस्य (पुरुष) अपना सकता है।

3

25. मानव जीनोम परियोजना (एच जी पी) एक महा योजना थी जिसे कुछ महत्वपूर्ण उद्देश्यों के लिए सन् 1990 में शुरू किया गया।

(a) एच जी पी के किन्हीं चार प्रमुख लक्ष्यों की सूची बनाइए।

(b) मनुष्य के अतिरिक्त किसी एक आम जन्तु मॉडल का नाम लिखिए जिसका कालांतर में अनुक्रमण किया गया।

3





21. “Some species of insects and frogs have evolved with various specific features that help them from being detected.”

(a) Justify the statement giving reasons.

(b) Mention any two such features. 2

SECTION – C

22. (a) “*Plasmodium* protozoan needs both a mosquito and a human host for its continuity.” Explain. 3

OR

(b) We all must work towards maintaining good health because ‘health is wealth’. Enlist any six ways of achieving good health. 3

23. “Biodiversity plays a major role in many ecosystem services that nature provides.”

(a) Describe any two broadly utilitarian arguments to justify the given statement.

(b) State one ethical reason of conserving biodiversity. 3

24. Name and explain a surgical contraceptive method that can be adopted by the male partner of a couple. 3

25. Human Genome Project (HGP) was a mega project launched in the year 1990 with some important goals.

(a) Enlist any four prime goals of HGP.

(b) Name any one common non-human animal model organism which has also been sequenced thereafter. 3





26. फसल समुन्नति कार्यक्रम के लिए कृत्रिम संकरण एक प्रमुख साधन (उपागम) है। यह सुनिश्चित करने के लिए कि केवल वांछित परागकण ही द्विलिंगी पुष्प के वर्तिकाग्र को ही परागित कर सके, पादप-प्रजनक द्वारा अपनाए जाने वाले चरणों की व्याख्या कीजिए। 3

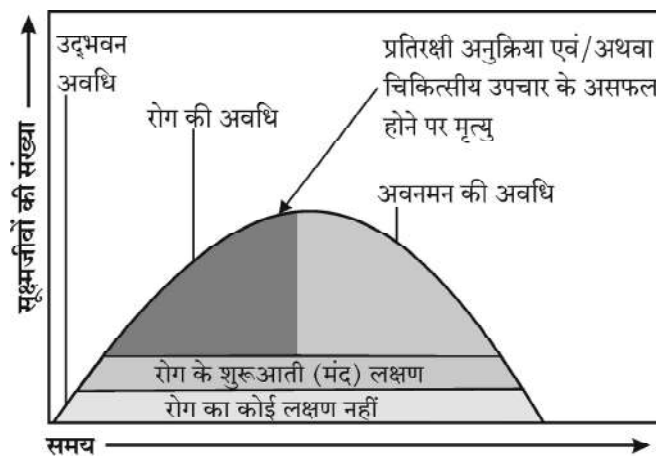
27. गैलापैगो द्वीपों की यात्रा के दौरान डार्विन द्वारा फिंच पक्षियों पर किए गए प्रेक्षणों का उल्लेख कीजिए। अपने प्रेक्षणों के लिए डार्विन द्वारा प्रस्तुत स्पष्टीकरण का उल्लेख कीजिए। 3

28. “तम्बाकू के पौधों को एक विशिष्ट सूत्रकृमि से बचाने हेतु (सुरक्षित रखने के लिए) आर एन ए अंतरक्षेपण तकनीक के उपयोग द्वारा पारजीनी तम्बाकू पौधे विकसित किए गए हैं।” जैव-प्रौद्योगिकीविदों द्वारा विकसित इस अनूठी कार्यनीति की व्याख्या कीजिए। 3

खण्ड – घ

प्रश्न 29 तथा 30 प्रकरण आधारित प्रश्न हैं। प्रत्येक प्रश्न के एक उपभाग में आंतरिक विकल्प दिया गया है।

29. जब कोई सूक्ष्मजीव किसी परपोषी पर आक्रमण करता है, तो सामान्यतः एक निश्चित क्रम में कुछ परिघटनाएँ परिघटित होती हैं जिसके परिणामस्वरूप संक्रमण तथा रोग उत्पन्न होते हैं तथा परपोषी को पीड़ा होती है। इस प्रक्रम को रोगजनन कहते हैं। जब कोई सूक्ष्मजीव परपोषी के प्रतिरक्षा तंत्र पर काबू पा लेता है, रोग का विकास परिघटनाओं के एक निर्धारित अनुक्रम में होता है। रोग के उद्भव के लिए परिघटनाओं का क्रम नीचे दिए गए ग्राफ द्वारा दर्शाया गया है। इस ग्राफ का अध्ययन करके अनुगामी प्रश्नों के उत्तर लिखिए :



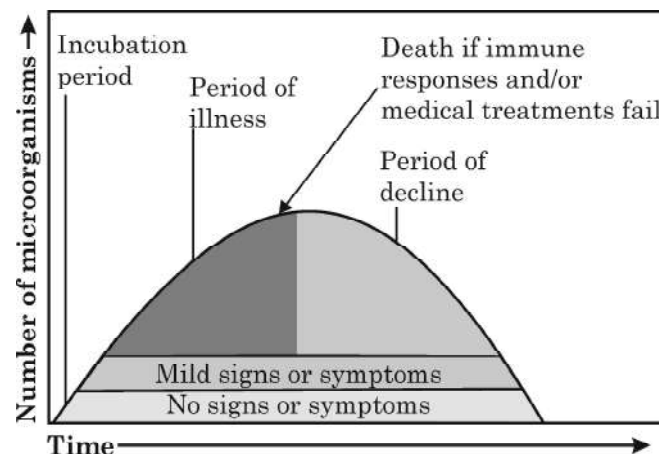


26. One of the major approaches of crop improvement programme is Artificial Hybridisation. Explain the steps involved in making sure that only the desired pollen grain pollinate the stigma of a bisexual flower by a plant breeder. 3
27. Mention Darwin's observations made on finches during his visit to Galapagos Islands. Write the explanation given by Darwin on his observations. 3
28. "RNA interference has been used to produce transgenic tobacco plants to protect them from the infestation by specific nematodes." Explain the novel strategy exploited by the biotechnologists. 3

SECTION – D

Q. Nos. **29** and **30** are case based questions. Each question has subparts with internal choice in one subpart.

29. When a microorganism invades a host, a definite sequence of events usually occur leading to infection and disease, causing suffering to the host. This process is called pathogenesis. Once a microorganism overcomes the defense system of the host, development of the disease follows a certain sequence of events as shown in the graph. Study the graph given below for the sequence of events leading to appearance of a disease and answer the questions that follow :





- (a) ग्राफ के अनुसार किस अवधि में रोगी से रोग के संचरण/संक्रमण की सर्वाधिक संभावना है और क्यों ? 1
- (b) ग्राफ का अध्ययन कीजिए और लिखिए कि रोग की उद्भव अवधि क्या है ? उस यौन संचारित रोग का नाम लिखिए जो इस अवधि में सरलता से संचारित हो सकता है । उस विशिष्ट लसीकाणु का नाम लिखिए जिस पर रोगजनक द्वारा हमला होता है । 2

अथवा

- (b) एक प्रतिरक्षी अणु की संरचना का नामांकित योजनात्मक चित्र बनाइए । 2
- (c) किस अवधि में न्यूमोनिया से पीड़ित (संक्रमित) व्यक्ति में प्रतिरक्षी अणु बनाने वाली प्रतिरक्षी कोशिकाओं की संख्या सर्वाधिक होगी ?
- प्रतिरक्षी अणु (प्रतिपिंड) उत्पन्न करने वाली प्रतिरक्षी कोशिकाओं का नाम लिखिए । 1

30. सभी सामान्य जीवों में गुणसूत्रों (क्रोमोसोमों) की संख्या निश्चित होती है जो उसकी जाति का निर्धारण करते हैं, जबकि किसी भी जीव में क्रोमोसोमों की संख्या में बदलाव अथवा असामान्यता के परिणामस्वरूप व्यष्टि में असामान्य विकार दृष्टिगोचर होते हैं । उदाहरण के लिए मानव स्त्री तथा पुरुष दोनों में क्रोमोसोमों की निर्धारित संख्या 46 है । पुरुषों में यह '44 + XY' तथा स्त्रियों में यह '44 + XX' है । अतः पुरुष विषम-युग्मकी होता है, दूसरे शब्दों में यह दो प्रकार के युग्मक उत्पन्न करता है यथा कुछ युग्मकों में '22 + X' तथा कुछ युग्मकों में '22 + Y' क्रोमोसोम होंगे । दूसरी ओर स्त्री समयुग्मकी होती है और केवल एक ही प्रकार '22 + X' क्रोमोसोम का युग्मक उत्पन्न करती है ।

कभी-कभी कोशिका चक्र के अर्धसूत्री विभाजन (मिओसिस) के दौरान त्रुटि होने के कारण सहक्रोमेटिड विसंयोजित न होने के कारण असामान्यताओं तथा विपथनों को जन्म देते हैं जिसके कारण क्रोमोसोम संख्या में परिवर्तन होता है तथा असामान्य युग्मक उत्पन्न होते हैं । निषेचन होने पर यह युग्मक असामान्य व्यष्टि को जन्म देते हैं ।

- (a) असुगुणिता (एन्युप्लोइडी) क्या है ? 1
- (b) यदि शुक्राणुजनन के समय मियोसिस के दौरान लिंग क्रोमोसोम के क्रोमेटिड्स में विसंयोजन न हो तो बदले हुए क्रोमोसोम संख्या वाले विभिन्न प्रकार के संभावित युग्मकों की संख्या लिखिए । 1
- (c) यदि एक मानव का एक सामान्य शुक्राणु (22 + Y) किसी एक '22 + XX' कैरियोटाइप वाले अंडाणु को निषेचित करता है तो होने वाली संतति के विकार का नाम तथा उसके दो अभिलक्षण लिखिए । 2

अथवा

- (c) मानव में सर्वाधिक ज्ञात तथा अकसर परिलक्षित अलिंगी, असुगुणिता वाले विकार का नाम लिखकर उसके दो अभिलक्षणों का उल्लेख कीजिए । 2





- (a) In which period, according to the graph there are maximum chances of a person transmitting a disease / infection and why ? 1
- (b) Study the graph and write what is an incubation period. Name a sexually transmitted disease that can be easily transmitted during this period. Name the specific type of lymphocytes that are attacked by the pathogen of this disease. 2

OR

- (b) Draw a schematic labelled diagram of an antibody. 2
- (c) In which period, the number of immune cells forming antibodies will be the highest in a person suffering from pneumonia ? 1
- Name the immune cells that produce antibodies.

30. The chromosome number is fixed for all normal organisms leading to species specification whereas any abnormality in the chromosome number of an organism results into abnormal individuals. For example, in humans 46 is the fixed number of chromosomes both in male and female. In male it is '44 + XY' and in female it is '44 + XX'. Thus the human male is heterogametic, in other words produces two different types of gametes one with '22 + X' chromosomes and the other with '22 + Y' chromosomes respectively. Human female, on the other hand is homogametic i.e. produces only one type of gamete with '22 + X' chromosomes only.

Sometimes an error may occur during meiosis of cell cycle, where the sister chromatids fail to segregate called nondisjunction, leading to the production of abnormal gametes with altered chromosome number. On fertilisation such gametes develop into abnormal individuals.

- (a) State what is aneuploidy. 1
- (b) If during spermatogenesis, the chromatids of sex chromosomes fail to segregate during meiosis, write only the different types of gametes with altered chromosome number that could possibly be produced. 1
- (c) A normal human sperm (22 + Y) fertilises an ovum with karyotype '22 + XX'. Name the disorder the offspring thus produced would suffer from and write any two symptoms of the disorder. 2

OR

- (c) Name a best known and most common autosomal aneuploid abnormality in human and write any two symptoms. 2





खण्ड – ड

31. (a) (i) स्थानांतरण (रूपांतरण) के प्रक्रम में अंतरण आर एन ए (tRNA) को आवेशित करना अत्यावश्यक क्यों है ? इसे किस प्रकार किया जाता है ?
- (ii) स्थानांतरण की प्रक्रिया के दौरान एक उत्प्रेरक के रूप में राइबोसोम के कार्यकलाप का वर्णन कीजिए ।
- (iii) प्रोटीन संश्लेषण के दौरान राइबोसोमी इकाइयों के एम आर एन ए से आबंधित होने वाले प्रक्रम की व्याख्या कीजिए ।

5

अथवा

- (b) ग्रेगर मेंडल द्वारा उपयोग किए गए मटर के शुद्ध वंशक्रम वाले बीज के आकार तथा बीजों के वर्ण (रंग) वाले द्विसंकर क्रॉस का F_2 पीढ़ी तक का वर्णन कीजिए ।
32. (a) किसी भी जैवप्रौद्योगिकी आधारित उत्पादन प्रक्रम में बायोरिएक्टर समावेशन वाहक हैं । बड़े स्तर पर उत्पादन तथा मितव्ययिता के कारण किसी भी जैवप्रौद्योगिकीय तकनीक की अन्तिम सफलता बायोरिएक्टर की दक्षता पर निर्भर करती है ।

5

उपरोक्त परिच्छेद के संदर्भ में निम्नलिखित प्रश्नों के उत्तर लिखिए :

- (i) किसी बायोरिएक्टर तंत्र के इष्टतमीकरण हेतु अवश्य संभावी परिचालन निर्देशों (नियमों) की सूची बनाइए । किन्हीं चार की सूची बनाएँ ।
- (ii) “कोशिकाओं की इष्टतम वृद्धि तथा उपापचयी क्रियाएँ ।” में उल्लेखित वृद्धि की अवस्था का उल्लेख कीजिए ।
- (iii) क्या बायोरिएक्टर में बना जैव उत्पाद वांछित तुरंत उपयोग के लिए पूर्णतः तैयार है ? अपने उत्तर के समर्थन में समुचित कारण भी लिखिए ।

अथवा

- (b) (i) पुनर्योगज डी एन ए तकनीक में ईको आर I (EcoRI) ने अत्यंत महत्वपूर्ण भूमिका निभाई है ।
- (I) ईको आर I का नामकरण करने वाली परंपरा की व्याख्या कीजिए ।
- (II) इस प्रतिबंधन एंजाइम की पहचान स्थल तथा विदलन स्थल के नाम लिखिए ।
- (ii) इन प्रतिबंधन एंजाइमों द्वारा निर्मित डी एन ए के प्रलंबी फैलाव को क्या कहते हैं । आर-डी एन ए के निर्माण में उनकी भूमिका का वर्णन कीजिए ।

2





SECTION – E

31. (a) (i) How and why is charging of tRNA essential in the process of translation ?
- (ii) State the function of ribosome as a catalyst in bacteria during the process of translation.
- (iii) Explain the process of binding of ribosomal units to mRNA during protein synthesis. 5

OR

- (b) Describe the dihybrid cross upto F_2 generation as conducted by Gregor Mendel using pure lines of Garden Pea for characters seed shape and seed colour. 5
32. (a) Bioreactors are the containment vehicles of any biotechnology-based production process. For large scale production and for economic reasons the final success of biotechnological process depends on the efficiency of the bioreactor. 5

Answer the following questions w.r.t. the given paragraph :

- (i) List the operational guidelines that must be adhered to so as to achieve optimisation of the bioreactor system. Enlist any four.
- (ii) Mention the phase of the growth we refer to in the statement “Optimisation of growth and metabolic activity of the cells”.
- (iii) Is the biological product formed in the bioreactor suitable for the intended use immediate ? Give reason in support of your answer.

OR

- (b) (i) ‘EcoRI’ has played very significant role in r-DNA technology. 3
- (I) Explain the convention for naming EcoRI.
- (II) Write the recognition site and the cleavage sites of this restriction endonuclease.
- (ii) What are the protruding and hanging stretches of DNA produced by these restriction enzymes called ? Describe their role in formation of r-DNA. 2





33. (a) (i) एक आवृतबीजी के बीजाण्ड में भ्रूणकोष के एकबीजाणुज विकास की व्याख्या कीजिए । 3
- (ii) आवृतबीजी बीजाण्ड में परिपक्व भ्रूणकोष का चित्र बनाकर इसके किन्हीं चार भागों को नामांकित कीजिए । 2

अथवा

- (b) (i) स्त्री (मानव मादा) में अंतर्रोपण के पश्चात् अपरा के विकास की व्याख्या कीजिए । 3
- (ii) गर्भाशय में मानव भ्रूण दर्शाते हुए चित्र बनाइए तथा इसके किन्हीं चार भागों को नामांकित कीजिए । 2





33. (a) (i) Explain the monosporic development of embryo sac in the ovule of an angiosperm. **3**
- (ii) Draw a diagram of the mature embryo sac of an angiospermic ovule and label any four parts in it. **2**

OR

- (b) (i) Explain the formation of placenta after the implantation in a human female. **3**
- (ii) Draw a diagram showing human foetus within the uterus and label any four parts in it. **2**
-



