PM SHRI KENDRIYA VIDYLAYA, BOUDH

PB-II Examination (Jan)- 2026

PHYSICAL ACTIVITY TRAINER (845)

CLASS-XII

Max. Marks- 50 **Time- 2 Hour**

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of 21 questions in two sections: Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.

SECTION – A: OBJECTIVE TYPE QUESTIONS

Q.1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)	
i	You work at the front desk of a telecom company. A customer approaches you while you are working. The customer has a query regarding a bill. What would you do? (a) Not pay attention to the customer (b) Keep the work aside and help the customer (c) Continue doing your work while talking inattentively to the customer (d) Ask the customer to talk to someone else	1
ii	What are the characteristics of an ideal message? (a) Clear (b) Concise (c) Accurate (d) All of the above	1
iii	Which of these sentences is punctuated correctly? (a) Where are you going. (b) I have a pen a notebook and a pencil. (c) I am so happy to see you! (d) This is my house	1
iv	Mr Gupta has a spreadsheet with a list of 500 items in his shop. A customer comes and asks for a particularitem. How should he arrange the data so that he can find that item fast? What would Mr Gupta do? He will: (a) apply filter (b) sort the data. (c) use password (d) format data.	1
v	Jaanvi's children have grown up. They have a lot of clothes that are too small for them now. What should Jaanvi do with these old clothes? (a) Throw them in the trash can (b) Burn them (c) Keep using them even though they are too small (d) donate them or make bags out of them	1
vi	The ability to act in a situation before others do is, (a) Interpersonal skills (b) initiative (c) perseverance (d) none of above	1

Q.2	Answer any 5 out of the given 6 questions on Employability Skills (1 x 5 = 5 marks)	
i	Physical Education contributes to the development of: (a) Only physical fitness (b) Only mental health (c) Physical, mental, emotional, and social development (d) Only sports skills	1
ii	Which sector focuses on weight loss and fitness improvement? a) Teaching b) Fitness Sector c) Journalism d) Equipment Management	1
iii	Sports photography is a part of: a) Sports medicine b) Sports journalism c) Sports psychology d) Coaching	1
iv	Which term refers to activities done for relaxation? a) Sports b) Games c) Physical Activity d) Recreation	1
v	Fixed rules and governing bodies are features of: a) Games b) Recreation c) Sports d) Physical activity	1
vi	Which life skill is developed through sports? a) Laziness b) Discipline c) Fear d) Isolation	1

Q.3	Answer any 5 out of the given 6 questions on Employability Skills (1 x 5 = 5 marks)	
i	The word assessment is derived from Latin word assidere meaning: a) To test b) To judge c) To sit beside d) To evaluate	1
ii	Continuous assessment providing feedback is called: a) Summative b) Diagnostic c) Formative d) Norm-referenced	1
iii	Peer assessment helps students to: a) Compete b) Learn from each other c) Get grades d) Reduce workload	1
iv	Tool ensuring consistency is: a) Rubric b) Checklist c) Benchmark d) Questionnaire	1
v	Reliability means: a) Validity b) Accuracy c) Consistency d) Difficulty	1
vi	First step of DRABC is: a) Response b) Airway c) Danger d) Circulation	1

Q.4	Answer any 5 out of the given 6 questions on Employability Skills (1 x 5 = 5 marks)	
i	Aerobic fitness test: a) Sprint b) Broad jump c) Beep test d) Push-up	1
ii	Aim of first aid: a) Cure b) Diagnose c) Preserve life d) Surgery	1
iii	Qualitative assessment focuses on: a) Scores b) Ranks c) Quality d) Marks	1
iv	Performance levels shown by: a) Checklist b) Rubric c) Scale d) Chart	1
v	Technical inspection is: a) Daily b) Weekly c) Low frequency d) Visual	1
vi	First aid for choking: a) CPR b) Ice c) Heimlich maneuver d) RICE	1

Q.5	Answer any 5 out of the given 6 questions on Employability Skills (1 x 5 = 5 marks)	
i	Hygiene helps to: a) Increase cost b) Reduce infections c) Reduce play d) Increase crowd	1
ii	According to the text, what is the main difference between assessment and evaluation? a) Assessment focuses on grades, while evaluation is product-oriented b) Assessment and evaluation are the same concepts c) Evaluation is ongoing, while assessment provides closure d) Evaluation improves learning quality, while assessment judges learning level	1
iii	Hand washing prevents: a) Fatigue b) Infection c) Injury d) Stress	1
iv	What is the primary purpose of an Emergency Action Plan in physical education and sports? a) To win sports competitions b) To guide people in responding to serious medical events c. To organize sports equipment d. To determine sports schedules	1
v	Which fitness parameter involves tests like Seated Medicine Ball Throw and Push-ups? a. Upper Body Strength b. Lower Body Strength c. Anaerobic Capacity d. Flexibility	1
vi	In a 3-point grading scale rubric, what does a "B" typically represent in terms of skill assessment? a. Proficient b. Developing c. Needs Improvement d. Excellent	1

SECTION – B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills (2x3=6 marks) Answer each question in 20-30 words.

Q.6	What do you understand by attitude?	2
Q.7	Explain the importance of green jobs in reducing the emission of greenhouse gases?	2
Q.8	Explain Time management? Mention two ways to manage it. ?	2
Q.9	What do you mean by Active Listing?	2
Q.10	Name any two green jobs in the following sectors. (i) Construction (ii) Renewable energy	2

Answer any 4 out of the given 6 questions in 20-30 words each (2 x 4 = 8 marks)

Q.11	Describe daily hygiene practices for players.	2
Q.12	what is benchmark?	2
Q.13	What is the CPR method, and when is it used?	2
Q.14	Name four careers in sports management?	2
Q.15	Explain emergency management in PE.	2
Q.16	Why Parent Teacher Meeting is important describe?	2

Answer any 3 out of the given 4 questions in 40-70 words each (4 x 3 = 12 marks)

Q.17	Difference between physical activity, games, sports, and recreation	4
Q.18	Differentiate between formative and summative assessment.	4
Q.19	Describe how Physical Education helps in the overall development of an individual.	4
Q.20	Describe Role of first aid kit in PE classes.**?**	4
Q.21	Explain the role of sports medicine in modern sports.	4

SET 2

KENDRIYA VIDYALAYA SANGATHAN, BHUBANESWAR REGION

PRE-BOARD EXAMINATION 2025-26

CHEMISTRY THEORY (043)

Max. Marks:70 **Time: 3 hours**

GENERAL INSTRUCTIONS:

Read the following instructions carefully.

a) There are 33 questions in this question paper with internal choice.

b) SECTION A consists of 16 multiple-choice questions carrying 1 mark each.

c) SECTION B consists of 5 short answer questions carrying 2 marks each.

d) SECTION C consists of 7 short answer questions carrying 3 marks each.

e) SECTION D consists of 2 case-based questions carrying 4 marks each.

f) SECTION E consists of 3 long answer questions carrying 5 marks each.

g) All questions are compulsory.

h) Use of log tables and calculators are not allowed.

SECTION A

The following questions are multiple-choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

1. When equilibrium is reached inside the two half-cells of the electrochemical cells, what is the net voltage across the electrodes?
a) > 1 b) < 1
c) = 0 d) Not defined

2. For a reaction A +B → C, the experimental rate law is found to be $R=k[A]^1[B]^{1/2}$. Find the rate of the reaction when [A] = 0.5 M, [B] = 0.1 M and k=0.03.
a) 4.74×10^{-2} $(L/mol)^{1/2}$ s^{-1}
b) 5.38×10^{-2} $(L/mol)^{1/2}$ s^{-1}
c) 5.748×10^{-2} $(L/mol)^{1/2}$ s^{-1}
d) 4.86×10^{-2} $(L/mol)^{1/2}$ s^{-1}

3. The compound obtained by the reaction of nitrous acid on methyl amine is:
a) methyl nitrite b) methyl alcohol
c) nitromethane d) dimethyl amine

4. Which of the following statements is not correct about order of a reaction.
a) The order of a reaction can be a fractional number.
b) Order of a reaction is experimentally determined quantity.
c) The order of a reaction is always equal to the sum of the stoichiometric coefficients of reactants in the balanced chemical equation for a reaction.
d) The order of a reaction is the sum of the powers of molar concentration of the reactants in the rate law expression.

5. Match List – I with List – II

List - I	List – II
A. $[Fe(CN)_6]^{3-}$	(i) 5.92 BM
B. $[Fe(H_2O)_6]^{3+}$	(ii) 0 BM
C. $[Fe(CN)_6]^{4-}$	(iii) 4.90 BM
D. $[Fe(H_2O)]^{2+}$	(iv) 1.73 BM

Options:

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

6. Which of the following acids is a vitamin?

a) Aspartic acid
b) Ascorbic acid
c) Adipic acid
d) Saccharic acid

7. Arrange the following compound in decreasing order of their boiling point

I. Bromopentane
II. 2-Bromo,2–methylpropane
III. 2- Bromobutane

a) I > II > III
b) II > III > I
c) I > III > II
d) III > II > I

8. The product of oxidation of I^- with MnO_4^- in alkaline medium is

a) IO_3^-
b) I_2
c) IO^-
d) IO_4^-

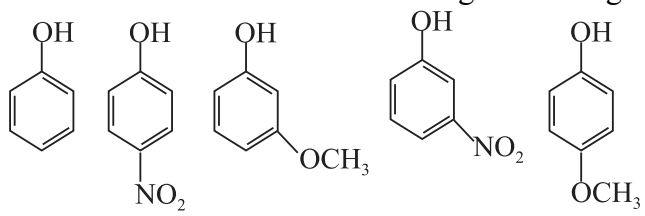
9. When 0.1 mol $CoCl_3(NH_3)_5$ is treated with excess of $AgNO_3$, 0.2 mol of AgCl are obtained. The conductivity of solution will correspond to

a) 1:3 electrolyte
b) 1:2 electrolyte
c) 1:1 electrolyte
d) 3:1 electrolyte

10. Which of the following compounds can exhibit linkage isomerism?

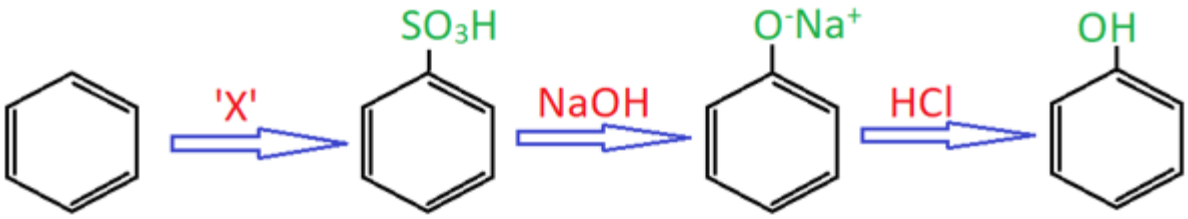
a) $[Co(en)_3]Cl_3$
b) $[Co(en)_2Cl_2]Cl$
c) $[Co(en)_2NO_2Cl]Br$
d) $[Co(NH_3)_5Cl]Br_2$.

11. Mark the correct order of decreasing acid strength of the following compounds.



(I) (ii) (iii) (iv) (v)

a) (v) > (iv) > (ii) > (i) > (iii)
b) (ii) > (iv) > (i) > (iii) > (v)
c) (iv) > (v) > (iii) > (ii) > (i)
d) (v) > (iv) > (iii) > (ii) > (i)

12. 

Identify X

a) Oleum
b) Sulphuric acid
c) Nitrous acid
d) Sodium sulphate

Q 13-16 are Assertion – Reason type of questions. Choose answer from following options:

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 : ter – Butyl methyl ether is not prepared by the reaction of ter-butyl bromide with sodium methoxide.
Reason *:* Sodium methoxide is a strong nucleophile.

14. Assertion: D-(+)- Glucose is dextrorotatory in nature.
Reason : 'D' reprasents its dextrorotatory nature .

15. Assertion : All collisions of reactant molecules lead to product formation.
Reason : Only those collisions in which molecules have correct orientation and sufficient kinetic energy lead to compound formation.

16. Assertion: Primary aromatic amines cannot be prepared by Gabriel phthalimide synthesis.
Reason: Aryl halides undergo nucleophilic substitution with anion formed by phthalimide.

SECTION B

This section contains 5 questions with internal choice in one question. The following questions are very short answer type and carry 2 marks each.

17. The molecular weights of sodium chloride and glucose are determined by the depression of freezing point method. As compared to their theoretical molecular weights, what will be their observed molecular weights when determined by the above method? Justify your answer.

18. An electrochemical cell is made of aluminium and tin electrodes with their standard reduction potentials -1-66 V and 0-14 V respectively. Select the anode and cathode, represent the cell and write the cell reaction. Find the emf of cell.

19. Account for the following:

a) The lowest oxide of transition metal is basic, and the highest is acidic.
b) Chromium is a hard metal while mercury is a liquid metal.

20. Aryl chlorides and bromides can be easily prepared by electrophilic substitution of arenes with chlorine and bromine respectively in the presence of Lewis acid catalysts. But why does preparation of aryl iodides require presence of an oxidizing agent?

OR

How will you convert the following: (any two)

a) Propene to 2-bromopropane

b) Bromoethane to propane nitrile

c) Aniline to chlorobenzene.

21. a) How does glucose react with HI? Which property of glucose is explained by this reaction?

b) If one strand of a DNA has the sequence –ATGCTCAC-, what is the sequence of the bases in the complementary strand?

SECTION C

This section contains 7 questions with internal choice in one question. The following questions are short answer type and carry 3 marks each.

22. a) Conductivity of metals decreases while that of the electrolytes increase with increase in temperature. Why?

b) What type of cell is mercury cell? Why is it more advantageous than dry cell?

c) Why is alternating current used for measuring resistance of an electrolytic solution?

23. Write the Nernst equation and calculate the emf and ΔG^0 of the cell at 298K.

$Zn|Zn^{2+}$ (0.001M) || H+(0.01M) $|H_2(g)$ (1bar) |Pt(s)

Given: $E^0_{, Zn2+/Zn} = -0.76V$, $E^0_{H+/H2} = 0.00V$ [log 10=1]

24. How would you account for the following?

a) The atomic radii of the metals of the third (5d) series of transition elements are virtually the same as those of the corresponding members of the second (4d) series.

b) The E° value for the Mn^{3+}/Mn^{2+} couple is much more positive than that for Cr^{3+}/Cr^{2+} couple or Fe^{3+}/Fe^{2+} couple.

c) The highest oxidation state of a metal is exhibited in its oxide or fluoride.

OR

a) Are the enthalpies of atomisation of Zinc and Copper matched correctly? Justify your answer.

Element	Enthalpy of atomisation $kJmol^{-1}$
Zinc	339
Copper	130

b) Complete the following ionic equations:

(I) $5SO_3^{2-} + 2MnO_4^- + 6H^+ \longrightarrow$

(II) $2MnO_4^- + H_2O + I^- \longrightarrow$

25. Give reason why-

a) p-Chloronitrobenzene reacts with (aq)NaOH at 443 K to give p-nitrophenol whereas chlorobenzene reacts with the same reagent at 623 K and 300 atm.

b) Tertiary alkyl halides are least reactive towards SN^2 reaction.

c) Alkyl chloride is best prepared by treation $SOCl_2$ with an alcohol.

26. Predict the products of the following reaction:

$$CH_3-CH=CH_2 \xrightarrow[(ii)\ 3H_2O_2/OH^-]{(i)\ B_2H_6} ?$$

$$C_6H_5-OH \xrightarrow{Br_2(aq)} ?$$

$$CH_3CH_2OH \xrightarrow{Cu/573K} ?$$

27. Give chemical tests to distinguish between the following pairs of compounds:

a) Propanoyl chloride and Propanoic acid

b) Benzaldehyde and Acetophenone

c) Ethanol and Ethanal

28. a) What is the difference between native protein and denatured protein?

b) Which one of the following has one glycosideic linkage ? Galactose, Lactose, Amylose, Fructose

c) Which vitamin is responsible for the coagulation of blood?

SECTION D

The following questions are case-based questions. Each question has an internal choice and carries 4 (2+1+1) marks each. Read the passage carefully and answer the questions that follow.

29. A pharmaceutical company is studying the breakdown of a new drug in the human body. The drug undergoes a first-order reaction in the bloodstream, where its concentration decreases over time. The initial concentration of the drug in the bloodstream is measured to be 80 mg/L. The scientists monitor the concentration of the drug at different time intervals and find that after 4 hours, the concentration of the drug has dropped to 20 mg/L. Based on this data, they conclude that the breakdown of the drug follows first-order kinetics.

a) Calculate the rate constant k for the drug's breakdown reaction.

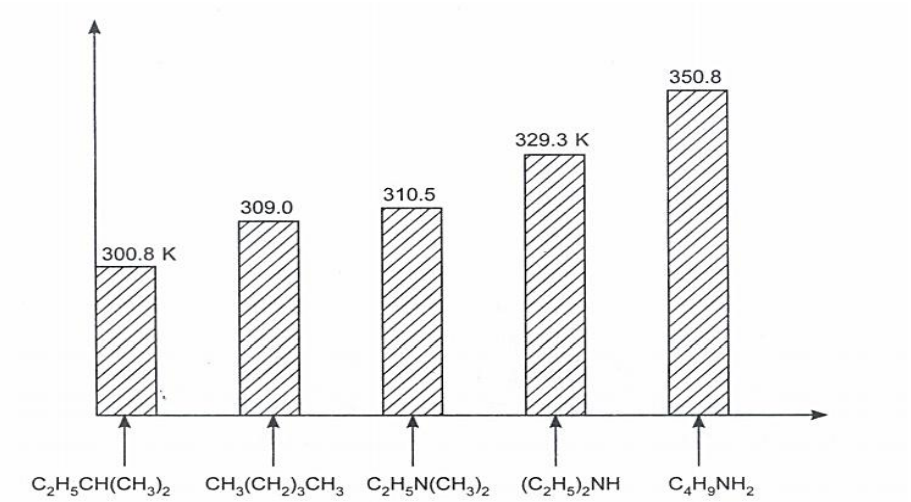
b) What is the relationship between the half-life of the drug in the bloodstream with its initial concentration.?

c) If the concentration of the drug needs to drop to 10 mg/L for it to become ineffective, how many hours will it take for the drug to reach this concentration?

OR

Draw a graph between $t_{1/2}$ vs concentration of the reactants for the first order reaction

30. Primary and secondary amines are engaged in intermolecular association due to hydrogen bonding between nitrogen of one and hydrogen of another molecule. This intermolecular association is more in primary amines than in secondary amines as there are two hydrogen atoms available for hydrogen bond formation in it. Tertiary amines do not have intermolecular association due to the absence of hydrogen atom available for hydrogen bond formation. Observe the histogram showing boiling points of pentane, iso pentane, 1°,2° and 3 ° amines. Answer the questions based on table and related concepts.



a) Why does $CH_3CH_2CH_2CH_2NH_2$ has higher boiling point than $(C_2H_5)_2NH$ and $C_2H_5N(CH_3)_2$?

b) How does a primary amine differ from primary alcohol when their boiling points are compared and why?

c) Arrange the amines given above in the increasing order of solubility in water. Give reason for your answer.

OR

Aniline is insoluble in water even though it has boiling point of 363K. Why?

SECTION E

The following questions are long answer types and carry 5 marks each. All questions have an internal choice.

31. a) State the following:

(i) Henry's law about partial pressure of a gas in a mixture.

(ii) Isotonic solutions

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.

OR

a) Give reasons for the following:

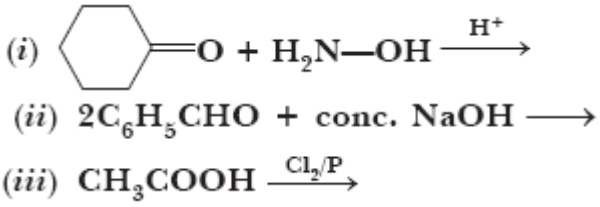
(i) Patients having sore throat are advised saline gargles.

(ii) Salt is added to water to get hard boiled eggs.

(iii) Oxygen is mixed with helium for use by deep sea divers.

b) 15 g of an unknown molecular substance was dissolved in 450 g of water. The resulting solution freezes at – 0.34 °C. What is the molar mass of the substance? (K_f for water = 1.86 K kg mol^{-1}).

32. a) Write the products of the following reactions:



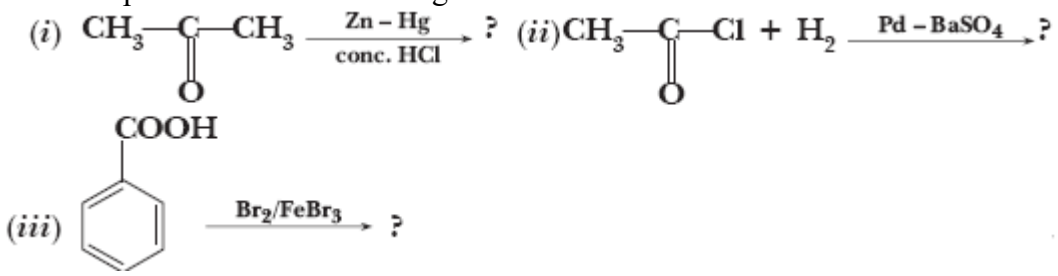
b) Describe

i. Aldol condensation

ii. Stephen's reduction

OR

a) Write the products of the following reactions:



b) An organic compound with the molecular formula $C_9H_{10}O$ forms 2, 4-DNP derivative, reduces Tollens' reagent and undergoes Cannizzaro reaction. On vigorous oxidation, it gives 1, 2-benzenedicarboxylic acid. Identify the compound. Write the structure of 2,4DNP derivative of the compound.

33. a) Write IUPAC names of the following:

(i) $[Co(H_2O)(CN)(en)_2]^{2+}$

(ii) $[PtCl_4]^{2-}$

(iii) $[Cr(NH_3)_4Cl(ONO)]^{+}$

b) In the following complex ions, explain the type of hybridization and shape :

i. $[Fe(H_2O)_6]^{2+}$

ii. $[NiCl_4]^{2-}$

OR

a) Explain the following:

i. Low spin octahedral complexes of nickel are not known.

ii. The π-complexes are known for transition elements only.

iii. The Complex $[Ti(H_2O)_6]^{3+}$is a coloured compound.

b) Write the 'd ' subshell configuration of $[Co(NH_3)_6]^{3+}$ and $[CoF_6]^{3-}$ in terms of t_{2g} and e_g.

c) Write the co-ordination number and oxidation no of central metal in compound $[Fe[(CN)_6]^{4-}$

SET-2

KENDRIYA VIDYALAYA SANGATHAN, BHUBANESWAR REGION
PRE-BOARD EXAMINATION (2025-26)
CLASS: XII
Subject: COMPUTER SCIENCE (083)

Maximum Marks = 70 **Maximum Time Allowed = 3 Hours**

General Instructions:

- This question paper contains 37 questions.
- All questions are compulsory. However, internal choices have been provided in some questions. Attempt only one of the choices in such questions.
- The paper is divided into 5 Sections- A, B, C, D and E.
- Section A consists of 21 questions (1 to 21). Each question carries 1 Mark.
- Section B consists of 7 questions (22 to 28). Each question carries 2 Marks.
- Section C consists of 3 questions (29 to 31). Each question carries 3 Marks.
- Section D consists of 4 questions (32 to 35). Each question carries 4 Marks.
- Section E consists of 2 questions (36 to 37). Each question carries 5 Marks.
- All programming questions are to be answered using Python Language only.
- In-case of MCQ, text of the correct answer should also be written.

Q.No.	Question	Marks
	SECTION – A	
1	State whether the following statement is True or False: The following Python code will raise an error: import statistics statistics.median([])	1
2	What will be the output of the following code? L = ["Python", "Programming", "Language"] print(L[0][-1] + L[2][0])	1
3	Consider the following expression: print(10 > 5 or 3 < 2 and not 4 == 4) Which of the following will be the correct output of the given expression? a) True b) False c) Error d) None	1
4	Which SQL operation results in all possible combinations of rows from two tables? a) Equi-Join b) Natural Join c) Cartesian Product d) None of these	1
5	Identify the output of the following code snippet: word = "Programming" print(word[1:10:2][::-1]) a) nmagr b) gmrmo c) rgamn d) gnmar	1
6	Write the output of the following Python code: L=[22,67,30,8,16] for k in L: L.pop() print(L)	1

<table>
<tr><td>7</td><td>What will be the output of the following Python statement?
print(4 + 3**2 * 2 - 18/3)
a) 20.0 b) 23.0 c) 21.0 d) 16.0</td><td>1</td></tr>
<tr><td>8</td><td>Riya is analyzing the budgets of different projects in her company. She has the following table
Projects
<table>
<tr><th>project_id</th><th>project_name</th><th>Budget</th></tr>
<tr><td>101</td><td>Alpha</td><td>5000</td></tr>
<tr><td>102</td><td>Beta</td><td>6000</td></tr>
<tr><td>103</td><td>Alpha</td><td>7000</td></tr>
<tr><td>104</td><td>Beta</td><td>5000</td></tr>
<tr><td>105</td><td>Gamma</td><td>9000</td></tr>
<tr><td>106</td><td>Delta</td><td>15000</td></tr>
</table>
She writes the following SQL query to display the total budget of each project whose total budget exceeds 10,000:
SELECT project_name, SUM(budget) FROM Projects HAVING SUM(budget) > 10000 GROUP BY project_name;
Identify and correct the error in her SQL query so that it executes correctly.</td><td>1</td></tr>
<tr><td>9</td><td>Find the output of the following code?

try:
  score = int("fifty") / 2
except ZeroDivisionError:
  print("Cannot divide by zero!")
except ValueError:
  print("Invalid input!")

a) Cannot divide by zero! b) Invalid input! c) ZeroDivisionError d) Nothing is printed</td><td>1</td></tr>
<tr><td>10</td><td>Riya is maintaining a dictionary of employees and their salaries in Python:

employees = {"Arjun": 50000, "Neha": 60000, "Vikram": 55000}
She wants to increase Vikram’s salary by 5000 and add a new employee “Sana” with salary 48000. Which of the following code snippet(s) will correctly update the dictionary?
a) employees["Vikram"] += 5000
employees.update({"Sana": 48000})

b) employees.append("Vikram", 60000)
employees["Sana"] = 48000

c) employees.update({"Vikram": 6000})
employees.add("Sana", 48000)

d) employees.push("Vikram", 60000)
employees["Sana"] = 48000</td><td>1</td></tr>
<tr><td>11</td><td>What is the possible output(s) of the program?
import random
values = [5, 10, 15, 20, 25]
start = random.randint(1, 2)
end = random.randint(2, 3)
for i in range(start, end + 1):
  print(values[i], end="@")</td><td>1</td></tr>
</table>

	a) 10@15@ b) 15@20@ c) 20@25@ d) 10@15@25@	
12	What will be the output of the following python code? total = 10 def add_points(points=5): global total total += points print("Inside function:", total, end=" | ") print("Before function call:", total, end=" | ") add_points() add_points(7) print("After function calls:", total) a) Before function call: 10 | Inside function: 15 | Inside function: 22 | After function calls: 22 b) Before function call: 10 | Inside function: 15 | Inside function: 17 | After function calls: 17 c) Before function call: 10 | Inside function: 5 | Inside function: 12 | After function calls: 12 d) Before function call: 10 | Inside function: 15 | Inside function: 20 | After function calls: 2	1
13	A database administrator needs to make the following changes to the **Students** table: 1. Increase the marks of all students in Class 12 by 5. 2. Add a new column address to store the student's residential address. Which SQL commands should be used to perform these two operations? a) INSERT and DELETE b) UPDATE and ALTER c) SELECT and DROP d) CREATE and TRUNCATE	1
14	What will be the output of the following code snippet? sentence = "Python is fun and Python is powerful" result = sentence.partition("Python") print(result) a) (' ', 'Python', ' is fun and Python is powerful') b) ('Python is fun and ', 'Python', ' is powerful') c) (' ', 'Python', 'Python is fun and is powerful') d) ('Python', 'Python', ' is fun and Python is powerful')	1
15	A table Orders currently has 5 columns and 6 rows. The database administrator performs the following operations: 1. Adds 2 new columns. 2. Inserts 3 new rows. What will be the updated degree and cardinality of the table? a) Degree: 5, Cardinality: 6 b) Degree: 7, Cardinality: 6 c) Degree: 7, Cardinality: 9 d) Degree: 8, Cardinality: 9	1

16 A table Courses contains the following records: 1

course_id	course_name	duration
101	Python Basics	30
102	Data Science	45
103	Python Basics	30
104	Web Development	40
105	Data Science	45

Write the SQL query to display the distinct course names in alphabetical order.
a) SELECT DISTINCT course_name FROM Courses
b) SELECT course_name FROM Courses ORDER BY course_name;
c) SELECT DISTINCT course_name FROM Courses ORDER BY course_name;
d) SELECT * FROM Courses;

17 Which of the following protocols is primarily used to allow remote access and management of network devices over a network? 1
a) HTTP b) Telnet c) FTP d) SMTP

18 Which network device is primarily used to regenerate and amplify signals so that data can travel longer distances without degradation? 1
a) Hub b) Switch c) Router d) Repeater

19 Which of the following is responsible for storing, processing, and delivering web pages to clients on request**?** 1
a) Web browser b) Web server c) URL d) Domain name

Q.20 and 21 are ASSERTION AND REASONING based questions. Mark the correct choice as
a. Both A and R are true and R is the correct explanation for A
b. Both A and R are true and R is not the correct explanation for A
c. Both A and R are false.
d. A is True but R is False
e. A is false but R is True

20 **Assertion (A):** Some sequence or collection types in Python can be changed after creation, while others cannot. 1
Reason (R): Lists and dictionaries are mutable, whereas tuples and strings are immutable.

21 **Assertion (A):** A table can have only one primary key, but may have multiple candidate keys, one of which can be chosen as the primary key. 1
Reason (R): Candidate keys are potential primary keys, and alternate keys are the remaining candidate keys not chosen as the primary key.

Section-B (7 x 2=14 Marks)

22 A. Explain the difference between mutable and immutable data types in Python. Give one example of each. 2
OR
B. Differentiate between arithmetic operators and relational operators in Python. Give one example of each.

23 The following Python code is intended to remove all vowels from a given string and return the new string. However, the code contains errors. Rewrite it after removing all the errors. Also, underline all the corrections made. 2

```
def remove_vowels(s)
  vowels = 'aeiou'
  for ch in s:
     str.replace(ch, '')
  return s
result = remove_vowels("Education")
print("Result: ", result)
```

24	A. (Answer using Python built-in methods/functions only): I. Write a statement to count the number of times the character 'e' appears in a string sentence. II. Write a statement to reverse the elements of a list numbers in-place. OR Predict the output of the following Python code: words = "Data Science is amazing" print(words.split(" ")) print(words.startswith("Data"))	2

25	A. Write a Python function filter_even(L) that accepts a list of integers L and removes all even numbers from it. If there are no even numbers in the list, the function should print "No even numbers found".
	OR
	
	B. Write a Python function add_course(courses, course_name, seats) where:
	
	• courses → a dictionary with course names as keys and available seats as values.
	• course_name → a string representing the course to add.
	• seats → an integer representing the number of seats for the course.
	
	The function should:
	• Check if course_name already exists in courses.
	  ○ If it exists, print "Course already exists".
	  ○ If it does not exist, add a new entry to the courses dictionary with course_name as the key and seats as the value.
	Example:
	courses = {"Math": 30, "Physics": 25}
	
	add_course(courses, "Chemistry", 20)
	# courses becomes {'Math': 30, 'Physics': 25, 'Chemistry': 20}
	add_course(courses, "Math", 35)
	# Output: Course already exists
		2

26	Consider a dictionary records where each key is a person's name and the corresponding value is a tuple of two numeric values. Predict the output of the program when the following Python code is executed:
	
	records = {"P1": (12000, 15000), "P2": (9000, 10000), "P3": (16000, 14000), "P4": (11000, 12000)}
	high_average = []
	
	for person in records:
	  total = records[person][0] + records[person][1]
	  average = total // 2
	  if average > 13000:
	  high_average.append(person)
	print(high_average)
		2

27	A. A database contains several tables. The administrator wants to perform two operations: • They want to view the list of all tables in the current database. • They want to check the structure of a specific table to see its column names and data types. Write the SQL commands to perform these tasks. OR B. Explain the difference between adding a new row to a table and removing an existing row. Which SQL commands are used for these operations? Illustrate with a simple example.	2
28	A. In a computer network, different devices help in data transmission and connectivity. Explain the role of: I. A device that regenerates and amplifies signals to extend the reach of a network. II. A device that connects multiple computers in a network and directs data to the intended recipient. OR B. Expand the abbreviations commonly used in networking: SMTP and PPP.	2
	Section-C (3 x 3 = 9 Marks)	
29	A. Write a Python function that counts and displays the number of lines in a text file named “Notes.txt” that contain the word “data” (in any case, e.g., *Data*, *DATA*, *data*). **OR** B. Write and call a Python function to read the contents of a text file “Message.txt” and display only those lines that start with the word “The” and end with a question mark (?).	3
30	A dictionary named students stores names of students as keys and their marks as values: students = {"Amit": 85, "Neha": 92, "Ravi": 67, "Sara": 78} Write the following user-defined functions (each with one argument**)** to perform stack operations on a list named TopperStack**:** **I.** push_topper(stu_dict) – Push all key–value pairs (name, marks) of students who scored above 75 into the stack. Output: [('Amit', 85), ('Neha', 92), ('Sara', 78)] II. pop_topper(stack) – Pop and display each element from the stack one by one. Display **"**Stack Empty" when no elements remain.	3

31	A. Predict the output of the following Python code:
	code = "PY-3X7"
	result = ""
	i = 0
	while i < len(code):
	  if code[i].isdigit():
	  num = int(code[i])
	  num = num * 2
	  result += str(num)
	  elif code[i].isupper():
		3

```
        result += chr(ord(code[i]) - 1)
    else:
        result += '*'
    i += 1
print(result)
```

OR

B. Predict the output of the following Python code:

```
cities = ["Delhi", "Agra", "Mumbai", "Pune", "Kolkata", "Patna"]
output = []
for city in cities:
    if len(city) % 2 == 0:
        output.append(city[0:3].upper())
    else:
        output.append(city[-2:].lower())
print(output)
```

Section-D (4 x 4 = 16 Marks)

32 Consider the table 4

INVENTORY

item_id	item_name	category	quantity	price
201	Laptop	Electronics	10	75000
202	Tablet	Electronics	15	25000
203	Cable	Stationery	50	1000
204	Bag	Stationery	40	5000
205	Headphones	Electronics	12	1500
206	Chair	Furniture	20	3000

A. Write SQL queries for the following:

I. Display category wise total quantity of items.

II. Display the details of all items where price is greater than 5000, sorted by price in descending order.

III. Display the distinct categories available in the inventory.

IV. Increase the price of all Electronics items by 10% .

OR

B. Predict the output of the following SQL queries:

I. SELECT item_id, quantity,price FROM INVENTORY WHERE item_name LIKE 'C%' ORDER BY item_name desc;

II. SELECT SUM(quantity) FROM INVENTORY WHERE category in ('Electronics', 'Stationery');

III. SELECT category, COUNT(*) FROM INVENTORY GROUP BY category HAVING COUNT(*) > 1;

IV. SELECT MAX(price) FROM INVENTORY;

33 Ravi runs a bookstore and maintains records of book sales in a CSV file named books.csv**.** 4

The columns of the CSV file are: id, name, sold, and price. Write Python user-defined functions to help him manage the data:

I. add_book(book): that Accepts a dictionary book containing the details of one book. The function should append a record containing dictionary values to the file books.csv

Example:
If book = {"id": 103, "name": "Data Structures", "sold": 15, "price": 600}
Add the record [103, 'Data Structures', 15, 600] to the csv file.

II. total_revenue()**:** Read all records from books.csv and calculate and print the total revenue, which is the sum of sold * price for all books.

III. high_revenue(threshold) – Accepts a number threshold as an argument and displays all books whose individual revenue (sold * price) is greater than the threshold**.**

34. Sneha is managing a Library Database and needs to access information from the Books and **Issue** tables for analysis. 4

Books

book_id	title	author	category
101	Physics Basics	Kumar	Science
102	Chemistry	Sharma	Science
103	History of India	Verma	History
104	Python Programming	Gupta	Computer
105	World Geography	Singh	Geography

Issue

issue_id	book_id	member_name	copies_issued
201	101	Anjali	2
202	102	Rohit	1
203	103	Priya	3
204	104	Anjali	1
205	101	Rohit	2

Write SQL queries for the following :

I. Display the total number of books issued by each member along with member name.
II. Display the book title, author and copies_issued for books in the Science category.
III. Delete all issue records where copies_issued is less than 2.
IV. **A.** Display the member name and the book title in ascending order of author names**.**

OR

B. Display the book category and total number of books issued per category.

35 A MySQL database named **StoreDB** has a table **inventory** with the following structure: 4

Column	Data Type	Description
code	Integer	Product code
name	Varchar(30)	Product name
stock	Integer	Quantity available
price	Integer	Price of the product

Connection details:

- Host: localhost
- Username: store_admin
- Password: store2025

Write a Python program using MySQL connectivity to Increase the stock of all products whose price is less than the average price of all items in the table by 10% of their current stock

Section-E (2 X 5 = 10 Marks)

36 Mr. Arun, a manager at a software company, needs to maintain records of employees. Each record contains: emp_id, name, dept, and salary. 5

Write Python functions to perform the following tasks:

I. add_employee(emp) – Accepts a dictionary emp as an argument containing the employee details and appends it to a binary file employees.dat.

II. update_it_salary(increment) – Reads all employee records from employees.dat and increases the salary of employees in the "IT" department by the value of increment. Save the updated records back to the file.

37 TechNova Inc. is setting up a new campus in Chennai while keeping its headquarters in Bengaluru. The campus has four buildings: Admin, Finance, Development, and Warehouse. The management wants efficient internal communication and the ability to transfer files with remote clients. Consider the following information: 5

Distance between buildings (in meters)

From	To	Distance
Admin	Finance	70
Admin	Development	95
Admin	Warehouse	90
Finance	Development	60
Finance	Warehouse	80
Development	Warehouse	50

Number of Computers in Each Block

Block	Number of Computers
Admin	50
Finance	45
Development	100
Warehouse	30

I. Suggest the best location for the main server in the campus and explain your reasoning.

II. Which network device will be used in each of the buildings and why.

III. Identify the type of network topology suitable for connecting all buildings efficiently. Then, draw a logical cable layout based on this topology.

IV. The company wants to connect all buildings in the Chennai campus with cables to ensure efficient and reliable internal communication. Which type of cable is most suitable for this purpose and why?

V. The management wants to allow employees to transfer files to a central server for remote clients. Which protocol will be suitable and why?

SET 2

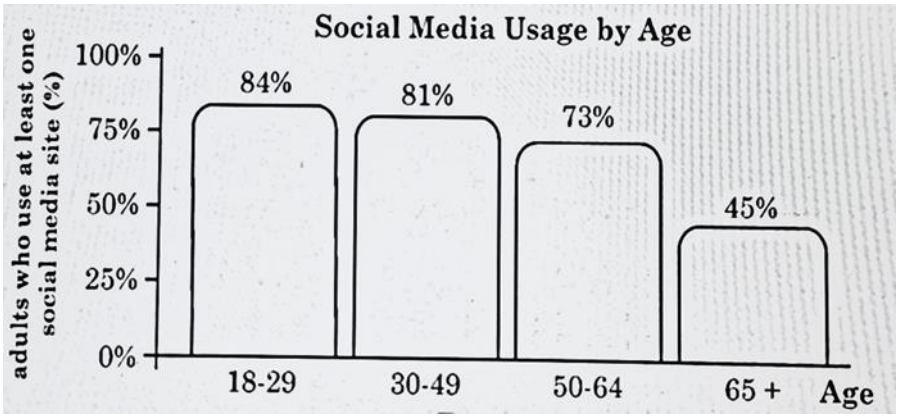
KENDRIYA VIDYALAYA SANGATHAN, BHUBANESWAR REGION
PRE- BOARD EXAMINATION (2025-26)
CLASS-XII
SUBJECT: ENGLISH CORE (301)

Maximum Marks: 80 **Maximum Time allowed: 3 Hrs.**

General Instruction:
Read the following instructions very carefully and strictly follow them:
(i) This paper has 13 questions. All questions are compulsory.
(ii) This question paper contains three sections - Section A: Reading Skills, Section B : Creative Writing and Section C : Literature
(iii) Attempt all questions based on specific instructions for each part. Write the correct question number and part thereof in your answer sheet.
(iv) Separate instructions are given with each question/ part, wherever necessary
(v) Adhere to the prescribed word limit while answering the questions.

	SECTION A: READING SKILLS (22 marks)	
1.	**Read the following passage carefully.**	**12**
1	**The Loneliness Epidemic and Why Society Must Care** *(Adapted and paraphrased from The New York Times & WHO Reports on Loneliness, 2024)* Loneliness is no longer an occasional private ache; it has become a public-health problem with consequences that reach far beyond individual sorrow. In recent years researchers and public-health officials have drawn attention to how social disconnection increases risks of depression, anxiety and physical illnesses such as cardiovascular disease, diabetes and even premature death.	
2	The COVID-19 pandemic made the problem more visible: lockdowns and social distancing interrupted ordinary patterns of connection — school corridors, workplaces, community events — and many people began reporting prolonged feelings of isolation. Yet the trend was already emerging before the pandemic: younger generations now report levels of loneliness comparable to, or sometimes higher than, older adults — a reversal of earlier assumptions that loneliness mainly affects the elderly.	
3	Why does loneliness matter for society, not only for the lonely person? Beyond individual suffering, widespread social disconnection erodes civic life and weakens communities. Schools, workplaces and neighbourhoods that lack social cohesion tend to show poorer mental-health outcomes and lower productivity; trust and civic participation decline. Importantly, the harms of loneliness are measurable: studies link social isolation to biological markers of inflammation and to increased mortality	

	risk — in other words, isolation shows up in bodies as well as moods.	
4	Solutions must therefore be structural as well as personal. Public-health responses emphasise community design (public spaces that invite interaction), supports in educational institutions, workplace policies that encourage connection, and mental-health services that detect and treat loneliness early. Campaigns that simply tell people to "befriend someone" are inadequate: policy change, funding for community initiatives, and deliberate efforts to make social institutions inclusive are necessary. If loneliness is treated as a public problem rather than a private failing, interventions can be designed at scale — in cities, schools and workplaces — to rebuild the everyday connections that sustain well-being. *Source: Adapted from The New York Times Health Section (2024) and WHO "Social Connection as a Health Priority" Report (2023).*	
	Answer the following questions, based on the passage above.	
I.	What is the main reason loneliness is now considered a public-health problem? A. It affects only elderly individuals. B. It influences both physical and mental health outcomes. C. It is a result of technological advancement. D. It increases community participation.	1
II.	Complete the following appropriately: The writer refers to the pandemic to show that _____.	1
III.	Which of the following is **NOT** mentioned as a structural solution to loneliness A. Creating inclusive public spaces B. Developing personal hobbies C. Introducing mental-health services D. Promoting workplace policies encouraging connection	1
IV.	What evidence does the author provide to show that loneliness "shows up in bodies as well as moods"? (*Answer in about 40 words*.)	2
V.	Complete the statement with the correct option. The phrase "social cohesion" refers to _____. A. mutual support and connectedness among members of a community B. competition between social groups C. economic dependence on social media D. rapid industrial growth	1
VI.	What change in generational patterns of loneliness has been observed according to the passage?	1
VII.	Complete the analogy with a word from paragraph 3: reduce : decline: togetherness : _____	1
VIII.	Explain briefly why campaigns that simply tell people to "befriend someone" are	2

	inadequate. (*Answer in about 40 words*.)	
IX	Which of the following best explains why loneliness weakens civic life, according to the passage? A. It prevents people from forming friendships online. B. It reduces trust, cooperation, and participation in community activities. C. It increases competition in schools and workplaces. D. It causes people to migrate from cities to rural areas.	1
X.	Choose the option that best states the central idea of the passage. A. Loneliness is an unavoidable part of modern life. B. Loneliness must be addressed through structural and societal action. C. Technology is the main cause of loneliness. D. Young people are lonelier than ever.	1
2.	**Read the following carefully.**	**10**
1	**News –** If you can't remember the last time you saw a teenager reading a book, newspaper or magazine, you're not alone. In recent years, less than 20 percent of teens report reading a book, magazine or newspaper daily for pleasure. More than 80 percent say they use social media every day, according to research published by the World Psychological Association.	
2	"Compared with previous generations, teens in the 2010s spent more time online and less time with traditional media, such as books, magazines and television," said lead author of the book YGen and professor of psychology at ABC University. "Time on digital media has displaced time once spent enjoying a book or watching TV."	
		
3	Swaner and her colleagues analysed data collected from an ongoing study of a nationally representative sample of approximately 50,000 eighth, tenth and twelfth grade students annually. They looked at survey results from 1976 to 2016, representing more than 1 million teenagers. While the study started with only twelfth-graders in the 1970s, eighth- and tenth-graders were added in 1991.	
4	Use of digital media increased substantially from 2006 to 2016. Among twelfth-graders, internet use during leisure time doubled from one to two hours per day	

	during that period. It also increased 75 percent for tenth-graders and 68 percent for eighth-graders.	
5	"In the mid-2010s, the average twelfth-grader reported spending approximately two hours a day texting, just over two hours a day on the internet – which included gaming – and just under two hours a day on social media," said Swaner. That's a total of about six hours per day on just three digital media activities during their leisure time."	
6	In comparison, tenth-graders reported a total of five hours per day and eighth-graders reported four hours per day on those three digital activities. Consequently the spent time in the digital world is seriously degrading the time they spend on more traditional media such as print book and newspapers.	
7	The decline in reading print media was especially steep. In the early 1990s, 33 percent of tenth-graders said they read a newspaper almost every day. By 2016, that number was only 2 percent. In the late 1970s, 60 percent of twelfth-graders said they read a book or a magazine almost every day; by 2016, only 16 percent did. Twelfth graders also reported reading fewer books in 2016 compared to how much they read in 1976, and approximately one third did not read a book (including e-books) for pleasure in the year prior to the 2016 survey.	
8	There's no lack of intelligence among young people. However due to over dependence on digital media they find it difficult to focus for long periods of time and to read long-form text. Subsequently they find it challenging to understand complex issues and develop critical thinking skills.	
	Answer the following questions, based on the passage above.	
I.	Does the following statement agree with the information given in paragraph 1? The writer believes that very few teens indulge in reading as a pleasurable activity. Select from the following: True: if the statement agrees with the information. False: if the statement contradicts the information. Not given: if there is no information on this.	1
II.	Select the option that best explains the main purpose of this research. In order to find out _____ (a) reading choices of teenagers. (b) digital competency of teenagers. (c) speed of reading text. (d) the decline of time spent on traditional media.	1
III.	Complete the statement based on the following statement: Traditional media has been replaced by digital media, we can say this because _____.	2
IV.	Complete the given sentence by selecting the most appropriate option:	1

	The concluding sentence of the passage makes a clear case for _____ by listing it as a core competency for analysis and application. (a) following social media (b) reading long texts (c) building focus and concentration (d) developing constructive habits	
V.	Complete the given sentence by selecting the most appropriate option: The digital activities that the twelfth-graders indulge in are _____. (a) texting, gaming, television (b) texting, gaming, social media (c) newspaper, books, magazine (d) television, books, gaming	1
VI.	Based on the passage, state two difficulties young people face due to overdependence on digital media.	2
VII.	What does the author mean by 'degrading the time' in para 6? (a) spending less time (b) waste of time (c) consuming more time (d) saving time	1
VIII.	As per Fig. 1, the percentage of people above 50 yrs are _____ the percentage of teenagers using social media. (a) greater than (b) less than (c) equal to (d) negligible to	1
	SECTION B: CREATIVE WRITING SKILLS	**18**
3.	**Attempt any one of the two, (A) or (B), in about 50 words.**	**1×4=4**
A.	You are Neha Sharma, Secretary of the Cultural Council, ABC International School, Pune. Your school plans to celebrate "Indigenous Languages Week" to promote linguistic diversity. Draft a notice inviting entries for short plays or poetry recitations in regional languages. Mention purpose, dates, and contact information.	4
	OR	
B.	The local branch of the British Council has agreed to hold a workshop in your school . Draft a notice in 50 words inviting students to give their names for participation. Mention relevant details of day, date, time and venue. You are Sohail/Suhina, President of the Literary Society of Rise Public School	4
4.	**Attempt any one of the two, (A) or (B), in about 50 words.**	**1×4=4**
A.	You are Rohit Mehta, Secretary of The Robotics Club at National Public School, Ahmedabad. Draft a formal invitation to Dr. Maya Arora, AI researcher at IIT Delhi, to inaugurate your Annual Tech Symposium "NeuraLink 2025", and deliver a keynote on Ethical AI.	4
	OR	
B.	You are Dr. Reena Sengupta. You have received an invitation from *City Public School* to attend their *Annual Day Celebration* as a special guest. Write a formal	4

	reply in about 50 words declining the invitation due to a prior engagement.	
5.	**Attempt any one of the two, (A) or (B), in 120-150 words.**	**1×5=5**
A.	You are Arnav Kohli, a resident of 22-B, Ridge Road, Shimla. Write a letter to the Editor, The Himalayan Times, expressing concern over the increasing human-wildlife conflict in hill areas. Highlight reasons—urban encroachment, food scarcity—and suggest practical steps citizens and authorities can take to reduce such incidents. You can take help of the cues given below: • Importance of awareness campaigns • Wildlife corridors • Garbage management • Community responsibility	5
	OR	
B.	You are Riya Sen, residing at 22/C, Lake View Apartments, Salt Lake, Kolkata. You came across the following advertisement in *The Daily Chronicle* for the post of a Content Writer in a reputed publishing company. Write a letter applying for the position, expressing your interest and suitability. Include your bio-data along with the application. **Join the Creative Minds Publishing House** We are a fast-growing publishing firm looking for talented individuals with: • Excellent writing and editing skills • Creativity and originality of thought • Ability to meet deadlines and work collaboratively **Educational Requirements:** Graduate in English, Journalism, or related field **Experience:** Not mandatory, but previous experience in content creation will be an added advantage Interested candidates may send their applications along with a detailed bio-data to the address below. **Contact:** Creative Minds Publishing House Address: 45, Park Street, Kolkata – 700016	5
6.	**Attempt any one of the two, (A) or (B), in 120-150 words.**	**1×5=5**
A.	You are Suhani Deshpande, student reporter for your school magazine The Young Voice. Write an article on the topic "Artificial Intelligence in Education: Aid or Obstacle?". Discuss its role in personalising learning, supporting teachers, and the ethical challenges it raises. You can take help of the cues given below: • Role of AI in personalised learning • Accessibility and inclusivity in education • Support for teachers in classrooms • Impact on students' critical thinking	5

	• Concerns about privacy and data use • Effect on teacher–student relationship	
	OR	
B.	As Amit Roy, member of the Editorial Board, write a report for your school magazine on the recent "Youth Climate Summit 2025" organised by the Department of Environment in collaboration with various schools of your city. Mention the aim, major events, key speakers, student participation and outcomes.	5
	SECTION C: LITERATURE	**40**
7.	**Read the given extracts and answer the questions for ANY ONE of the given two, (A) or (B).**	**1X6=6**
A.	*"Aunt Jennifer's tigers prance across a screen,* *Bright topaz denizens of a world of green:* *They do not fear the men beneath the tree;* *They pace in sleek chivalric certainty."* *(Aunt Jennifer's Tigers)*	
I.	What do you infer from the fact that Aunt Jennifer is creating the tigers?	1
II.	Choose the option that displays the same poetic device used in the last line of the extract. A. As cunning as a fox B. Tiger, tiger burning bright C. Life is a rainbow D. Accurate estimate of the work	1
III.	If a student were to interpret the word 'prancing' in a real-world context, which of the following would it best represent? a) An employee working under the pressure of deadlines. b) A soldier standing firm and ready for battle at the frontier. c) A child playing freely in a park, unburdened by responsibilities. d) A bird trapped in a cage, longing to be free and fly high.	1
IV.	Select the correct option from those given in bracket, to fill in the blank. The tigers are described as being _____. (ferocious / timid)	1
V.	All of the following are true for the extract EXCEPT — A. The tigers symbolise confidence and fearlessness, contrasting with Aunt Jennifer's life. B. The phrase "chivalric certainty" evokes an image of graceful but timid creatures. C. The imagery of "bright topaz" and "world of green" creates a vivid natural setting. D. The tigers represent a world untouched by the fears that dominate Aunt Jennifer's reality.	1
VI.	How are Aunt Jennifer's tigers described?	1
	OR	
B.	*"Fishermen in the cold sea* *would not harm whales* *and the man gathering salt*	

	would look at his hurt hands." *(Keeping Quiet)*	
I.	What does the poet expect of the fisherman?	1
II.	What do the given lines tell us about mankind? A. Materialism B. Greed C. Selfish nature D. All of these	1
III.	Complete the sentence appropriately. The selfish nature of man is leading to _____.	1
IV.	Select the correct option from those given in bracket to fill in the blank. The tone of the poet in the given lines is _____. (optimistic / regretful)	1
V.	All of the following are true for the extract EXCEPT — A. The poet imagines a moment of stillness bringing harmony between humans and nature. B. The reference to 'hurt hands' symbolises the consequences of human labour. C. The tone of the extract suggests that action and urgency are key to healing the world. D. The lines reflect the poet's hope for introspection and non-violence.	1
VI.	According to the poet, how will 'keeping quiet' help the man who works as 'salt gatherer'?	1
8.	**Read the given extracts and answer the questions for ANY ONE of the given two, (A) or (B).**	**4X1=4**
A.	*"Will the West Antarctic ice sheet melt entirely? Will the Gulf Stream current be disrupted? Will it be the end of the world as we know it? Maybe. Maybe not. Either way, Antarctica is a crucial element in this debate—not merely because it's the only place in the world, which has never sustained human population and therefore remains relatively 'pristine' in this respect, but more importantly, because it holds in its ice-cores half-million-year-old carbon records trapped in its layers of ice."* *(Journey to the End of the Earth)*	
I.	Complete the sentence appropriately. The questions asked by the narrator signify _____.	1
II.	What do you infer from the statement, "...it's the only place in the world, which has never sustained a human population and therefore remains relatively 'pristine'"?	1
III.	'Maybe. Maybe not' indicates _____. A. suspicion B. foretelling	1

	C. uncertainty D. despair	
IV.	What is the purpose of the questions asked in the extract?	1
	OR	
B.	*Derry: "It's got nothing to do with my face and what I look like. I don't care about that and it isn't important. It's what I think and feel and what I want to see and find out and hear. And I'm going back there." (On the Face of It)*	
I.	Complete the sentence appropriately with reference to the extract. When Derry goes 'back there', he sees _____.	1
II.	What do Mr. Lamb and Derry suffer from?	1
III.	What does the given extract represent about the speaker? (Derry) A. The speaker (Derry) is defying his mother's wishes. B. The speaker (Derry) has accepted his true self. C. The speaker (Derry) is forming his own opinions. D. All of the above	1
IV.	Why did Derry want to return to 'that' place?	1
9.	**Read the given extracts and answer the questions for ANY ONE of the given two, (A) or (B**).	**1X6=6**
A.	*His success in films overshadowed and dwarfed his literary achievements — or so his critics felt. He composed several truly original 'story poems' in folk refrain and diction and also wrote a sprawling novel Thillana Mohanambal with dozens of very deftly etched characters. He quite successfully recreated the mood and manner of the Devadasis of the early 20th century. He was an amazing actor — he never aspired to the lead roles — but whatever subsidiary role he played in any of the films, he performed better than the supposed main players. He had a genuine love for anyone he came across and his house was a permanent residence for dozens of near and far relations and acquaintances. (Poets and Pancakes)*	
I.	What inference can be drawn from the line 'dozens of very deftly etched characters?	1
II.	Select the correct option from those given in bracket to fill in the blank. The phrase 'near and far' suggests people came from _____. (everywhere / nearby)	1
III.	Complete the following sentence. According to the extract, Subbu was benevolent and _____.	1
IV.	Why does the narrator say that Subbu never aspired to be a lead actor even though he was an amazing actor?	1
V.	Which of these statements is **not true** about Subbu? (a) His literary achievements stole the limelight from his films.	1

	(b) He was a gifted poet and writer and his literary works were noteworthy. (c) He was selfless in nature and was empathetic towards others. (d) He never hankered after lead roles and performed minor roles in films.	
VI.	What aspects of the man's character and accomplishments does the extract most clearly highlight? A. Artistic versatility in literature and acting B. Desire to dominate the film industry C. Exceptional skill in supporting roles D. Generosity and warmth towards others E. Obsession with fame and critical approval Select the most appropriate option: (a) A, C and D (b) B, D and E (c) A and E (d) B and C	1
	OR	
B.	*"Why do I refuse to be interviewed? Because it is immoral! It is a crime, just as much of a crime as an offence against my person, as an assault, and just as much merits punishment. It is cowardly and vile. No respectable man would ask it, much less give it. (The Interview)*	
I.	How does the given line oppose the common perception of interviews?	1
II.	Select the correct option from those given in bracket to fill in the blank. The attitude of the speaker of these lines towards the interview was _____. (laudable / depreciative)	1
III.	Complete the following appropriately. The inference that can be drawn from the line "No respectable man would ask it, much less give it" is _____.	1
IV.	Read the assertion and the reason below, with reference to the given extract: Assertion (A): The speaker refuses to be interviewed. Reason (R): He dislikes talking to strangers and prefers to stay silent. Choose the correct option: (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.	1
V.	What are the main reasons the speaker compares interviews to an offence against the person?	1
VI.	What does the expression "merits punishment" mean here? (a) Interviewer should be condemned and punished (b) Appreciated (c) Should be jailed	1

	(d) Should be isolated	
10.	**Answer ANY FIVE of the following six in 40–50 words each.**	**5X2= 10**
I.	How did Douglas's fear of water develop, and what steps did he take to overcome it? (Deep Water)	2
II.	How does Sophie plan to get the kind of money she wanted for her boutique ? (Going Places)	2
III.	In *Lost Spring*, how does Anees Jung use contrasting settings to underline social inequality?	2
IV.	What message about inter-generational empathy emerges from *My Mother at Sixty-Six?*	2
V.	Explain why Gandhi agreed to a settlement that involved a 25% refund to the indigo farmers	2
VI.	Interpret the metaphor of the rattrap in the story and explain its significance	2
11.	**Answer ANY TWO of the following three in 40–50 words each**	**2X2=4**
I.	What layers of irony are present in the Tiger King's obsession with death? *(The Tiger King)*	2
II.	What was the dilemma faced by Sadao on seeing the prisoner of war ? (The Enemy)	2
III.	What conflicting identities does Zitkala-Sa grapple with in 'The Cutting of My Long Hair'? *(Memories of Childhood)*	2
12.	**Answer ANY ONE of the following in 120–150 words.**	**1X5=5**
A.	What do the images of nature signify in Keats' 'A Thing of Beauty" and Pablo Neruda's 'Keeping Quiet'?	
	OR	
B.	"Both Sophie and Franz face moments where reality clashes with their expectations. Discuss how their responses to these situations reflect the importance of self-awareness and accepting responsibility."	
13.	**Answer ANY ONE of the following in 120–150 words.**	**1X5=5**
A.	Charley's yearning for the simplicity of 1894 and Tishani Doshi's voyage to Antarctica, both stem from disillusionment with the modern world. Discuss how these texts explore the need to reconnect with authenticity and perspective in an age dominated by haste, technology, and superficial progress.	
	OR	
B.	Dr. Sadao emerges as a saviour of humanity. Substantiate your answer with evidence from the text.	

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केन्द्रीय विद्यालय संगठन , भुवनेश्वर संभाग

प्रथम प्री- बोर्ड परीक्षा—2025-26

विषय-हिन्दी केन्द्रिक (कोड -302)

कक्षा : बारहवीं

समय- 3 घंटे **कुल अंक-80**

सामान्य निर्देश :

***निम्नलिखित निर्देशों को बहुत सावधानी से पढिए और उनका पालन कीजिए |**

*यह प्रश्न पत्र तीन खंडों में विभाजित है |

*खंड 'क' में अपठित बोध से संबंधित प्रश्न पूछे गए हैं सभी प्रश्नो के उत्तर देना अनिवार्य है |

*खंड 'ख ' में पाठ्यपुस्तक, अभिव्यक्ति माध्यम से संबंधित प्रश्न पूछे गए हैं | प्रश्नो में आंतरिक विकल्प दिए गए हैं |

*खंड 'ग ' में पाठ्यपुस्तक आरोह और वितान से प्रश्न पूछे गए हैं | प्रश्नो में आंतरिक विकल्प दिए गए हैं |

*तीनो खंडों के उत्तर देना अनिवार्य है |

*यथासंभव तीनों खंडों के प्रश्नों के उत्तर क्रमश: लिखिए |

प्र. सं	खंड-क (अपठित बोध)	अंक
प्र.1	**निम्नलिखित गद्यांश को पढ़कर पूछे गये प्रश्नों के सर्वाधिक उचित विकल्प चुनकर लिखिए|**	
	तत्ववेत्ता शिक्षाविदों के अनुसार विद्या दो प्रकार की होती है। प्रथम वह, जो हमें जीवन-यापन के लिए अर्जन करना सिखाती है और द्वितीय वह, जो हमें जीना सिखाती है। इनमें से एक का भी अभाव जीवन को निरर्थक बना देता है। बिना कमाए जीवन-निर्वाह संभव नहीं। कोई भी नहीं चाहेगा कि वह परावलंबी हो-माता-पिता, परिवार के किसी सदस्य, जाति या समाज पर। पहली विद्या से विहीन व्यक्ति का जीवन दूभर हो जाता है, वह दूसरों के लिए भार बन जाता है। साथ ही विद्या के बिना सार्थक जीवन नहीं जिया जा सकता। बहुत अर्जित कर लेने वाले व्यक्ति का जीवन यदि सुचारु रूप से नहीं चल रहा, उसमें यदि वह जीवन-शक्ति नहीं है, जो उसके अपने जीवन को तो सत्यपथ पर अग्रसर करती ही है, साथ ही वह अपने समाज, जाति एवं राष्ट्र के लिए भी मार्गदर्शन करती है, तो उसका जीवन भी मानव-जीवन का अभिधान नहीं पा सकता। वह भारवाही गर्दभ बन जाता है या पूँछ-सींगविहीन पशु कहा जाता है। वर्तमान भारत में दूसरी विद्या का प्राय: अभाव दिखाई देता है, परंतु पहली विद्या का रूप भी विकृत ही है, क्योंकि न तो स्कूल-कॉलेजों में शिक्षा प्राप्त करके निकला छात्र जीविकोपार्जन के योग्य बन पाता है और न ही वह उन संस्कारों से युक्त हो पाता है, जिनसे व्यक्ति 'कु' से 'सु' बनता है; सुशिक्षित, सुसभ्य और सुसंस्कृत कहलाने का अधिकारी होता है। वर्तमान शिक्षा-पद्धति के अंतर्गत हम जो विद्या प्राप्त कर रहे हैं, उसकी विशेषताओं को सर्वथा नकारा भी नहीं जा सकता। यह शिक्षा कुछ सीमा तक हमारे दृष्टिकोण को विकसित भी करती है, हमारी मनीषा को प्रबुद्ध बनाती है तथा भावनाओं को चेतन करती है, किंतु कला, शिल्प, प्रौद्योगिकी आदि की शिक्षा नाममात्र की होने के फलस्वरूप इस देश के स्नातक के लिए जीविकार्जन टेढ़ी खीर बन जाता है और बृहस्पति बना युवक नौकरी की तलाश में अर्जियाँ लिखने में ही अपने जीवन का बहुमूल्य समय बर्बाद कर लेता है।जीवन के सर्वांगीण विकास को ध्यान में रखते हुए यदि शिक्षा के क्रमिक सोपानों पर विचार किया जाए, तो भारतीय विद्यार्थी को सर्वप्रथम इस प्रकार की शिक्षा दी जानी चाहिए, जो आवश्यक हो, दूसरी जो उपयोगी हो और तीसरी जो हमारे जीवन को परिष्कृत एवं अलंकृत करती हो। ये तीनों सीढ़ियाँ एक के बाद एक आती हैं, इनमें व्यतिक्रम नहीं होना चाहिए। इस क्रम में व्याघात आ जाने से मानव-जीवन का चारु प्रासाद खड़ा करना असंभव है। यह तो भवन की छत बनाकर नींव बनाने के सदृश है। वर्तमान भारत में शिक्षा की अवस्था देखकर ऐसा प्रतीत होता है कि प्राचीन भारतीय दार्शनिकों ने 'अन्न' से 'आनंद' की ओर बढ़ने को जो 'विद्या का सार' कहा था, वह सर्वथा समीचीन ही था।	

क	गदयांश के अनुससर जीवन-यापन के लिए अर्जन करना कौन सीखता है ? i-परिवार ii-प्रथम प्रकार की विद्या iii- द्वितीय प्रकार की विद्या iv- समाज	1
ख	'कु' से 'सु' बनाने में क्या आशय निहित है ? i-दुर्लभ से सुलभ बनाना ii- दुर्गम से सुगम बनाना iii- दुर्जन से सुजन बनाना iv- इनमें से कोई नहीं |	1
ग	प्रस्तुत गदयांश किस विषय वस्तु पर आधारित है – **i-जीने की कला पर ii-वर्तमान भारतीय शिक्षा पर iii-मानव जीवन की सार्थकता पर iv-शिक्षा के सोपान पर**	1
घ	देश के स्नातक के लिए टेढ़ी खीर क्या बन जाता है ?	1
ड.	भारतीय विद्यार्थियों को कैसी शिक्षा दी जानी चाहिए ?	2
च	वर्तमान भारत में शिक्षा की व्यवस्था को देखकर कैसा प्रतीत होता है ?	2
छ	गद्यांश के अनुसार व्यक्ति पूँछ –सींग विहीन पशु कब कहा जाता है ?	2
प्र.2	**नीचे लिखे काव्यांश को ध्यानपूर्वक पढ़िये और प्रश्नों के सर्वाधिक उचित विकल्प चुनकर उत्तर दीजिए-**	
	यह हार एक विराम है जीवन महासंग्राम है तिल-तिल मिटूँगा पर दया की भीख मैं लूँगा नहीं। वरदान माँगूँगा नहीं।। क्या हार में क्या जीत में क्या हार में क्या जीत में किंचित नहीं भयभीत मैं संघर्ष पथ पर जो मिले यह भी सही वह भी सही। वरदान माँगूँगा नहीं।। लघुता न अब मेरी छुओ तुम हो महान बने रहो अपने हृदय की वेदना मैं व्यर्थ त्यागूँगा नहीं। वरदान माँगूँगा नहीं।। चाहे हृदय को ताप दो चाहे हृदय को ताप दो चाहे मुझे अभिशाप दो कुछ भी करो कर्तव्य पथ से किंतु भागूँगा नहीं। वरदान माँगूँगा नहीं।।	
क-	कवि ने हार किसे माना है ? i-त्याग को ii- वरदान को iii-विराम को iv- अभिशाप को |	1
ख-	प्रस्तुत अंश में कवि ने क्या त्यागने की बात कही है ? i-कर्तव्य मार्ग ii-हृदयगत वेदना iii-वरदान iv-संघर्ष पथ	1
ग-	वरदान माँगूँगा नहीं" - पंक्ति के माध्यम से कवि के व्यक्तित्व की किस विशेषता का पता चलता है ? i-अहंकारी ii- कायर iii-दयावान iv- आत्मविश्वासी और स्वाभिमानी |	1
घ-	तिल-तिल मिटते हुए भी कवि क्या स्वीकार न करने की बात कह रहा है ?	1
ड.	कवि ने हार और जीत के माध्यम से क्या बताने का प्रयास किया है ?	2
च	कर्तव्य की राह पर चलते हुए कवि क्या संकल्प धारण करता है ?	2

	खंड (ख) अभियक्ति और माध्यम पुस्तक पर आधारित प्रश्न	
प्र.3	**निम्नलिखित विषयों में से किसी एक विषय पर लगभग 120 शब्दों में रचनात्मक लेख लिखिए**	1x6=06
	क- आत्मनिर्भर भारत ख- समुद्र तट पर एक शाम **ग-** मेरी पहली हवाई यात्रा	
प्र.4	**निम्नलिखित प्रश्नो को ध्यानपूर्वक पढ़कर किन्ही चार प्रश्नों के उत्तर लगभग 40 शब्दों में लिखिए-**	4x2=08
	क- डेडलाइन से क्या अभिप्राय है और ये क्यों आवश्यक है ? ख- रेडियों संचार का कैसा माध्यम है ? इसकी दो सीमाएं लिखिए | ग- समाचार लेखन के छह ककार कौन कौन से हैं ? घ- जनसंचार का कौन सा माध्यम सबसे पुराना है ? इस माध्यम की विशेषताएँ और सीमाएं लिखिए | ड.- 'ड्राय एंकर' और 'फोन इन' किसे कहते हैं ?	
प्र.5	**निम्नलिखित प्रश्नो को ध्यानपूर्वक पढ़कर किन्ही दो प्रश्नों के उत्तर लगभग 80 शब्दों में लिखिए |**	2x4=08
	क- नाटक और कहानी में क्या अंतर है ? कहानी की तुलना में लोग नाटक को लंबे समय तक क्यों याद रखते हैं ? ख- पत्रकारीय लेखन, साहित्यिक लेखन से किस प्रकार अलग है ? स्पष्ट करें | ग- कहानी का नाट्य रूपान्तरण करते समय किन किन बातों का ध्यान रखना चाहिए ?	
	खंड –(ग) पाठ्य-पुस्तक आरोह भाग-2 पर आधारित प्रश्न	
प्र.6.	**निम्नलिखित काव्यांश के आधार पर पूछे गए प्रश्नों के सर्वाधिक उचित विकल्प चुनकर लिखिए |**	5x1=5
	खेती न किसान को, भिखारी को न भीख, बलि बनिक को बनीज, न चाकर को चाकरी। जीविका बिहीन लोग सीद्यमान सोच बस, कहैं एक एकन सों 'कहां जाइ, का करी?' वेदहूँ पुराण कही, लोकहूं बिलोकिअत सांकरे सबैं पै,राम रावरे ! कृपा करी दारिद-दसानन दबाई दुनी, दीनबंधु! दुरित-दहन देखि तुलसी हहाकरी|	
क-	**प्रस्तुत अंश में किस युग का वर्णन है ?** i-कलियुग ii-तुलसी के समय का iii-रावण के शासन का iv-राम के रामराज्य का	
ख-	**इस अंश में किस समस्या का उल्लेख है ?** i-दरिद्रता ii-बेरोजगारी iii-रावण का अत्याचार iv-भूख और बेरोजगारी |	

ग	**कथन (A) और कारण (R) को पढ़कर सही विकल्प चुनकर लिखिए** कथन-(A)- आर्थिक संकटों से मुक्त होने के लिए राम –कृपा आवश्यक है | कारण (R) मनुष्य का हाहाकार या प्रयत्न ही काफी नहीं है | i-कथन (A) सही है और कारण (R) उसकी सही व्याख्या करता है ii-कथन (A) सही है पर कारण (R) उसकी सही व्याख्या नहीं है | iii-कथन (A) गलत है पर कारण (R) सही है | iv-कथन (A) और कारण (R) दोनों गलत हैं |	
घ-	**रूपक अलंकार का उदाहरण कौन सा होगा ?** i- रामरावरे ! कृपाकरी ii दवाईदुनी, दीनबंधु iii- दारिद-दसानन दबाई iv- जीविका बिहीन	
ड.	**वेदों और पुराणों में क्या कहा गया है?** i-नीति की शिक्षा ii-ईश्वर की भक्ति iii-समाजसेवा iv-संकट के समय में ईश्वर का ही सहारा	
प्र.7	**निम्नलिखित प्रश्नों में से किन्हीं <u>दो</u> प्रश्नों के उत्तर लगभग 60 शब्दों में लिखो |**	2x3 =06
	क- 'विप्लव रव से छोटे ही हैं शोभा पाते' पंक्ति में विप्लव –रव से क्या तात्पर्य है ? छोटे ही हैं शोभा पाते' ऐसा क्यों कहा गया है ? ख- स्पष्ट करें की 'उषा' कविता गाँव की सुबह का गतिशील शब्द चित्र है ? ग- कैमरे में बंद अपाहिज़' कविता करुणा के मुखौटे में छिपी क्रूरता की कविता है। विचार कीजिए	
प्र.8	**निम्नलिखित प्रश्नों में से किन्हीं <u>दो</u> प्रश्नों के उत्तर 40 शब्दों में लिखो |**	2x2 =04
	क- शीतल वाणी में आग होने का क्या तात्पर्य है ? ख- उड़ने और खिलने का कविता से क्या संबंध बनता है? कविता के बहाने पाठ से आशय स्पष्ट कीजिए| ग- छोटा मेरा खेत कविता में छोटे चौकोने खेत को कागज का पन्ना क्यों कहा गया है ?	
प्र.9	**निम्नलिखित गदयांश को पढ़कर सर्वाधिक सही विकल्प का चयन करें |** रात्रि की विभीषिका को केवल पहलवान की ढोलक ही ललकारकर चुनौती देती रहती थी। पहलवान संध्या से सुबह तक, चाहे जिस ख्याल से ढोलक बजाता हो, किंतु गांव के अर्द्धवृत्त, औषधि- उपचार पथ्य- विहीन प्राणियों मेंयह संजीवनी शक्ति ही भरती थी। बूढ़े, बच्चे, जवानों की शक्तिहीन आंखों के आगे दंगल का दृश्य नाचने लगता था। स्पंदन-शक्ति-शून्य,स्नायुओं में भी बिजली दौड़ जाती थी। अवश्य ही ढोलक की आवाज में न तो बुखार हटाने का कोई गुण था और न महामारी की सर्वनाश शक्ति कोरोकने की शक्ति ही,पर इसमें संदेह नहीं कि मरतेहुए प्राणियों को आँख मूँदते समय कोई तकलीफ नहीं होती थी, मृत्यु से डरते नहीं थे।	5x1=5
क-	**कथन (A) और कारण (R) को पढ़कर सही विकल्प चुनकर लिखिए** **कथन (A) पहलवान की ढोलक की आवाज सुनकर महामारी से तड़पते हुए लोगों को मृत्यु का भय नहीं लगता था ।** **कारण (R) पहलवान की ढोलक में संजीवनी शक्ति थी।** i- कथन (A) और कारण (R) दोनों सही है तथा कारण कथन की सही व्याख्या करता है । ii-कथन (A) सही है लेकिन कारण (R) गलत है। iii-कथन (A) तथा कारण (R) दोनों गलत है। iv-कथन (A) सही है, लेकिन कारण (R) उसकी गलत व्याख्या करता है।|	
ख-	**गांव के बच्चे, बूढ़े, जवानों को पहलवान की ढोलक की आवाज सुनते ही क्या याद आ जाता था?** i- दंगल का दृश्य ii- मृत्यु का भय iii- राजा की दयालुता iv रात्रि का अंधकार	

ग-	**'ढोलक की आवाज को सुनकर बिना किसी तकलीफ के अपने प्राण कौन त्याग देता था ?** i-लुट्टन सिंह ii-चाँद सिंह iii-मरता हुआ व्यक्ति iv- स्वस्थ व्यक्ति	
घ-	**पहलवान की ढोलक गांव के अर्द्धमृत, औषधि-उपचार पथ्य- विहीनप्राणियों में .....भरती थी ।** i – निश्चिन्तता ii- जिजीविषा iii- शक्तिविहीनता iv- स्पंदन शून्यता	
ङ.-	**गद्यांश के आधार पर निम्नलिखित कथनों पर विचार कीजिए** 1-पहलवान की ढोलक की आवाज सुनकर गांव के लोगों के सामने दंगल का दृश्य आ जाता था| 2-पहलवान की ढोलक रात्रि की भयावहता को कम कर देती थी। 3- पहलवान की ढोलक की आवाज पीड़ितों का उपचार करती थी। उपर्युक्त में से कौन- सा/से कथन सही है/हैं-- i-केवल 1 ii-केवल 2 iii-1 और 2 iv- 1 और 3	
प्र.10	**निम्नलिखित प्रश्नों में से किन्हीं <u>दो</u> प्रश्नों के उत्तर लगभग 60 शब्दों में लिखो |** क- लेखक ने शिरीष को कालजयी अवधूत (संन्यासी) की तरह क्यों माना है ? ख- जाति प्रथा भारतीय समाज में बेरोजगारी व भुखमरी का भी एक कारण कैसे बनती रही है? क्या यह स्थिति आज भी है ? ग- बाजार का जादू क्या हैं ? उसके चढ़ने-उतरने का मनुष्य पर क्या प्रभाव पड़ता हैं?'बाजार दर्शन' पाठ के आधार पर उत्तर लिखिए|	3 x2 =06
प्र.11	**निम्नलिखित प्रश्नों में से किन्हीं <u>दो</u> प्रश्नों के उत्तर 40 शब्दों में लिखो |** क- जीजी ने इंदर सेना पर पानी फेंके जाने को किस तरह सही ठहराया? ख- भक्तिन के आ जाने से महादेवी अधिक देहाती कैसे हो गई? ग- लेखक के मत से दासता' की व्यापक परिभाषा क्या है?	2x2 =04
प्र.12	**निम्नलिखित प्रश्नों को ध्यानपूर्वक पढ़कर किन्हीं <u>दो</u> प्रश्नों के उत्तर 100 शब्दों में लिखो |** क- यशोधर बाबू की पत्नी समय के साथ ढल सकने में सफल होती है, लेकिन यशोधर बाबू असफल रहते हैं। ऐसा क्यों? ख- आपके खयाल से पढ़ाई-लिखाई के संबंध में लेखक और दत्ताजी राव का रवैया सही था या लेखक के पिता का? तर्क सहित उत्तर दें। ग- सिंधु-सभ्यता की खूबी उसका सौंदर्य-बोध है जो राज-पोषित या धर्म-पोषित न होकर समाज-पोषित था।' ऐसा क्यों कहा गया?	2x5=10

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SET-2

KENDRIYA VIDYALAYA SANGATHAN BHUBANESWAR REGION

PRE-BOARD EXAMINATION 2025-26

CLASS XII SUBJECT: PHYSICS (042)

MAXIMUM MARKS: 70 **TIME ALLOWED: 3 HOURS**

General Instructions

(1) There are 33 questions in all. All questions are compulsory.
(2) This question paper has five sections: Section A, Section B, Section C, Section D and Section E.
(3) All the sections are compulsory.
(4) **Section A** contains **sixteen questions, twelve MCQ and four assertion reasoning based of 1 mark each**, **Section B** contains **five questions of two marks each**, **Section C** contains seven questions of three marks each, **Section D** contains **two case study-based questions of four marks each** and **Section E** contains **three long answer questions of five marks each**.
(5) There is no overall choice. However, an internal choice has been provided in two questions in Section B, one question in Section C and all three questions in Section E. You have to attempt only one of the choices in such questions.
(6) Use of calculators is not allowed.
(7)You may use the following values of physical constants where ever necessary

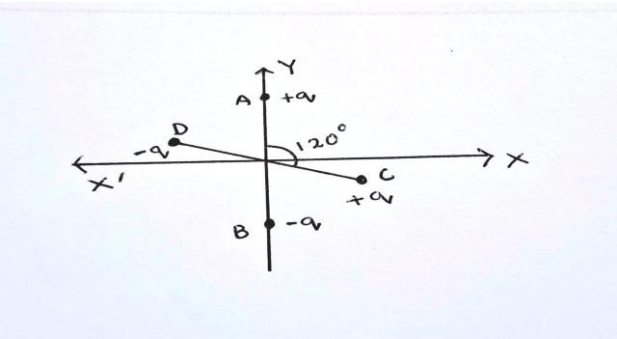
c = 3×10^{8}m/s; **h** = 6.63×10^{-34}Js; e = 1.6×10^{-19}C; $\mu_o = 4\pi \times 10^{-7}$ TmA^{-1}; $\varepsilon_o = 8.854 \times 10^{-12}$ C^{2}N^{-1}m; $\frac{1}{4\pi\epsilon_o} = 9 \times 10^{9}$ Nm^{2}C^{-2}; $m_e = 9.1 \times 10^{-31}$ Kg; $m_n = 1.675 \times 10^{-27}$Kg; $m_p = 1.673 \times 10^{-27}$ Kg; $N_A = 6.023 \times 10^{23}$ /g.mole **k** = 1.38×10^{-23} JK^{-1}.

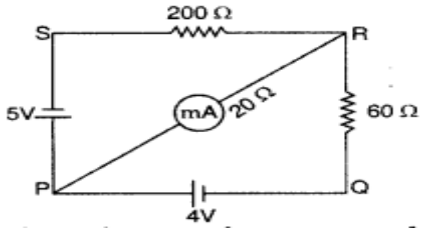
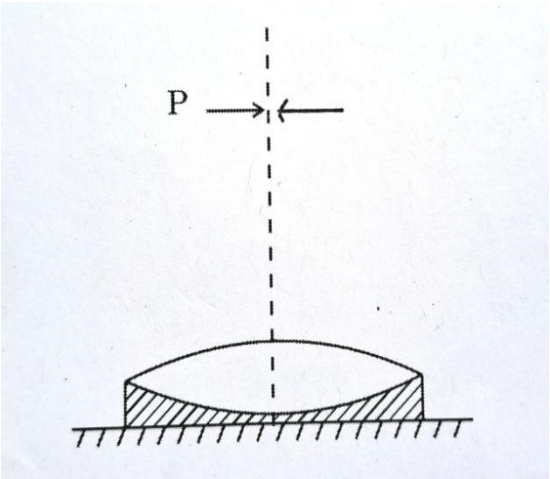
QN	SECTION-A	MM
1	**A charged particle is placed between the two plates of a charged parallel plate capacitor. It experiences a force F. If one plate is removed, then the force on the particle will be** **(A) 2F** **(B) F** **(C) F/2** **(D) zero**	1
2	**Φ_1 is the electric flux going out of an imaginary cube of side 'a' that encloses an isolated point charge 2q and Φ_2 is the electric flux going out of an imaginary sphere of radius 'a' that encloses an isolated point charge 3q. Then Φ_1/Φ_2 is:** **(A) 1/π** **(B)2/3** **(C) 9/4** **(D)π**	1
3	**The internal resistance of a 2.1 V cell which gives a current of 0.2A through a resistance of 10Ω is** **(A) 0.5Ω** **(B) 0.8 Ω** **(C) 1.0 Ω** **(D) 0.2 Ω**	1
4	**An electron is projected with velocity v along the axis of a current carrying long solenoid. Which one of the following statements is true?** **(A) The path of the electron will be circular about the axis.** **(B)The electron will be accelerated along the axis** **(C) The path of the electron will be helical** **(D) The electron will continue to move with the same velocity v along the axis of the solenoid.**	1

5	A charge having specific charge 10^8C/Kg and with velocity $3x10^5$m/s enters into a uniform magnetic field 0.3T at an angle 30^0 with direction of field. The radius of curvature will be (A)0.01cm (B)0.5cm (C)1cm (D) 2cm	1
6	A square shaped coil of side 10cm, having 100 turns is placed perpendicular to a magnetic field which is increasing at 1T/sec. The induced emf in the coil is (A)0.1V (B)0.5V (C)0.75V (D)1.0V	1
7	An ac voltage $V = V_o \sin \omega t$ is applied to a series combination of a resistor R and an element X. The instantaneous current in the circuit is $I = Io \sin (\omega t + \pi/4)$. Then which of the following is correct. (A) X is a capacitor and $X_C=\sqrt{2}R$ (B) X is an inductor and $X_L=R$ (C) X is an inductor and $X_L=\sqrt{2}R$ (D)X is a capacitor and $X_C=R$	1
8	The electromagnetic waves used in RADAR systems are: (A)Infrared waves (B)Ultraviolet rays (C) Microwaves (D) X-rays	1
9	A biconcave lens of power P vertically splits into identical Plano-concave parts. The power of each part will be (A) 2P (B) P/2 (C) P (D) $P/\sqrt{2}$	1
10	The kinetic energy of a proton and that of an α-particle are 4eV and 1eV, respectively. The ratio of the de-Broglie wavelengths associated with them, will be (A) 2:1 (B) 1:1 (C) 1:2 (D) 4:1	1
11	A nucleus with mass number 240 breaks into two fragments each of mass number 120. The binding energy per nucleon of unfragmented nuclei is 7.6MeV while that of fragments is 8.5MeV. The total gain in the Binding energy in the process is (A) 804 MeV (B) 216MeV (C)0.9MeV (D) 9.4MeV	1
12	If one of the slit in Young Double Slit Experiment is partially covered so that the amplitude of light decreases from previous value then (A) Intensity of maxima and minima decreases (B) no change in intensity of maxima and minima (C) Intensity of minima increase and maxima decrease (D) Intensity of maxima increase and minima decrease	1

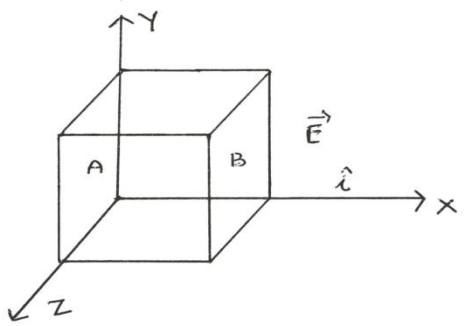
For Questions 13 to 16, two statements are given one labelled Assertion(A) and other labelled reason(R). Select the correct answer to these questions from options as given below.
(A)Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(B) Both Assertion and Reason are true and Reason is not the correct explanation of Assertion.
(C) Assertion is true but Reason is false.
(D) Both Assertion and Reason are false.

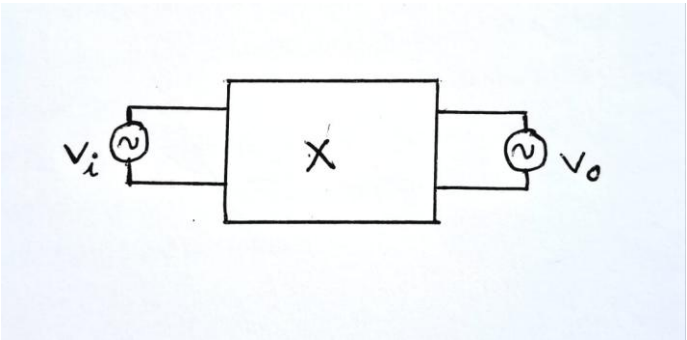
13	Assertion (A): If the length of a conductor is doubled, the drift velocity will become half of the original value (keeping potential difference and temperature unchanged). Reason(R): At constant potential difference, drift velocity is inversely proportional to the length of the conductor.	1
14	Assertion (A): If the objective and eye lenses of a microscope are interchanged then it works as telescope. Reason(R): The objective lens of telescope has large focal length and small aperture.	1

15	**Assertion (A): When tiny circular obstacle is placed in the path of light from some distance, a bright spot is seen at the centre of the shadow of the obstacle.** **Reason(R): Destructive interference occurs at the centre of the shadow.**	**1**
16	**Assertion (A): Work function of aluminium is 4.2 eV. Emission of electron will not possible if two photons each of energy 2.5eV, strike an electron of aluminium.** **Reason(R): For photoelectric emission, the energy of each photon should be greater than the work function of aluminium.**	**1**
	SECTION-B	
17	**Two small identical electric dipoles AB and CD, each of dipole moment p are kept at an angle of 120^0 to each other in an external electric field E pointing along the X axis as shown in the figure.** **Find the (a) dipole moment of the arrangement, and (b) magnitude and direction of the net torque acting on it.** 	**2**
18	**A battery is connected first across the series combination and then across the parallel combination, of three resistances R, 2R and 3R. In which of the three resistances will power dissipated be maximum in the two cases? Justify your answer.**	**2**
19(I)	**A charge particle, having a charge q, is moving with a speed v along the X-axis. It enters a region of space of electric field E j and a magnetic field B. When the particle emerges from the region, it is observed to be moving along X-axis with the same velocity only. Find an expression for magnetic field B and its direction.** **OR**	**2**
19(II)	**An external magnetic field gets modified when applied to material X and Y.** **Identify the materials and plot susceptibility verses temperature graph for material X.**	**2**
20(I)	**Radiation of frequency $3x10^{15}$Hz is incident on a photosensitive metal of threshold frequency $1.0x10^{15}$Hz. Calculate** **(a) work function of the metal** **(b) maximum kinetic energy of photoelectrons.** **OR**	**2**
20(II)	**(a)What are matter waves?** **(b) An electron is accelerated through a potential difference of 100 volts. What is the de-Broglie wavelength associated with it?**	**2**

21	**Explain the following, giving proper reason:** **(a) During charging of a capacitor, displacement current exists between the two plates of the capacitor, but there is no displacement current when it gets fully charged.** **(b) Infrared waves are also known as heat wave.**	**2**
	SECTION-C	
22	**Explain the working of full wave rectifier with circuit diagram. Draw the input and output wave forms.**	**3**
23	**(a) State Kirchhoff' rules.** **(b) The network PQRS, shown in the circuit diagram, has the batteries of 4 V and 5 V and negligible internal resistance. A milliammeter of 20 Ω resistance is connected between P and R. Calculate the reading in the milliammeter.**  	**3**
24	**(a)The density of the nuclear matter is tremendously larger than the physical density of the material. Explain.** **(b)Draw a plot of the potential energy between a pair of nucleons as a function of distance between them inside a nucleus. Write two conclusions from it about nuclear force.**	**3**
25	**The figure given below shows an equiconvex lens (n=1.5) in contact with a liquid layer on top of a plane mirror. A small needle with its tip on the principal axis is moved along the axis until its inverted image is found at the position of the needle. The distance of the needle from the lens is measured to be 45cm. When the liquid is removed and the experiment is repeated, the new distance is 30.0cm. Find the refractive index of the liquid.**  	**3**
26	**State Huygens principle. Using it draw a diagram showing the passage of a plane wave front from a denser into a rarer medium. Hence derive Snell's law.**	**3**
27(I)	**State Biot-Savart's law. Write its vector form. Using it derive an expression for the magnetic field on the axis of a current carrying circular loop.** **OR**	**3**
27(II)	**A straight thick long wire of uniform circular cross-section of radius 'a' is carrying a steady current I. The current is uniformly distributed across the cross-section. Use Ampere's circuital law to obtain magnetic field(B) at a distance r from the centre of the cross-section of the wire.** **(a) inside(r<a) (b) outside (r>a)** **Plot a graph showing the variation B with r.**	**3**

28	(a)Define self inductance. Write its S.I. unit. (b) The current I flowing through an inductor of self-inductance L is linearly increasing with time t. Plot the variation of (i) Magnetic flux(φ_B) versus the current(I) (ii) Induced emf(E) versus dI/dt	3
	SECTION-D	
29	SEMICONDUCTOR DIODE A pure semiconductor like Ge or Si, when doped with a small amount of suitable impurity, becomes an extrinsic semiconductor. In thermal equilibrium, the electron and hole concentration in it are related to the concentration of intrinsic charge carriers. Two process, diffusion and drift take place during formation of a p-n junction. A semiconductor diode is basically a p-n junction with metallic contacts provided at the ends for the application of external voltage. A p-n junction diode allows currents to pass only in one direction when it is forward biased. Due to this property, a diode is widely used to rectify alternating voltages, in half-wave or full wave configuration. (i) When Ge is doped with Boron, then which of the following is incorrect. (A) it becomes p-type semiconductor (B)It is electrically neutral (C) the acceptor energy level is just above the valence band. (D) the acceptor energy level is just below the conduction band. (ii)At a given temperature, the number of intrinsic charge carriers in a semiconductor is 2.0×10^8 m^{-3}. It is doped with impurity atoms. As a result, the number of holes in it becomes 4×10^{10} m^{-3}. The electrons in the semiconductor is (A) $4 \times 10^{10} m^{-3}$ (B) $1 \times 10^6 m^{-3}$ (C) $8 \times 10^{18} m^{-3}$ (D) $10^{10} m^{-3}$ (iii)During the formation of a p-n junction- (A) electrons diffuse from p-region into n-region and holes diffuse from n-region into p-region. (B) both electrons and holes diffuse from n-region into p-region. (C) electron diffuse from n-region into p-region and holes diffuse from p-region into n-region. (D) both electrons and holes diffuse from p-region into n-region (iv)The charge of P-type semiconductor is: (A) positive (B)negative (C)zero (D)depends on dopant OR (v) Depletion layer consists of A) holes B) protons C) immobile ions D) electrons	4
30	BOHR'S THEORY OF HYDROGEN ATOM Hydrogen atom consists of an electron revolving in a circular orbit of radius r with certain velocity v around a proton located at the nucleus of the atom. The electrostatic force of attraction between the revolving electron and the proton provides the requisite centripetal force to keep it certain stable orbits. The angular momentum of the electron in these orbits is some integral multiple of ($h/2\pi$). Further, when an electron makes a transition from one orbit of higher energy to that of lower energy, a photon is emitted having energy equal to the difference between energies of the initial and final states.	4

	(i) The angular momentum of an electron in the second orbit of Hydrogen atom is **(A)2πh (B) π h (C)2h / π (D) h / π** **(ii) Radius of the nth orbit of the revolving electron in a hydrogen atom is directly proportional to** **(A)n^2 (B) n (C)n^3 (D)1/n^2** **(iii) The potential and kinetic energy of electron in first excited state of hydrogen atom are** **(A)-13.6eV,3.4eV (B) -27.2eV,13.6eV (C) -6.8eV,3.4eV (D) -3.4eV,3.4eV** **(iv)The ratio of time period of electron in second and third excited state of hydrogen atom is** **(A)2:3 (B) 3:4 (C) 27:64 (D) 9:16** **OR** **(iv) Two H atoms in the ground state collide inelastically. The maximum amount by which their combined kinetic energy is reduced is** **(A) 13.6 eV (B) 20.40 eV (C) 10.2 eV (D) 27.2 eV**	
	SECTION-E	
31(I)	**(a)A dielectric slab of dielectric constant 'K' and thickness 't'(t<d) is inserted between plates of a parallel plate capacitor of plate separation 'd' and plate area 'A'. Obtain an expression for its capacitance.** **(b) Two capacitors of different capacitances are connected first in series and then in parallel across a dc source of 100V. If the total energy stored in the combination in the two cases are 40mJ and 250mJ respectively, find the capacitance of the capacitor.** **OR**	**3+2**
31(II)	**(a)Using Gauss's law find the expression for electric field intensity (E) at a distance 'x' from an infinite non conducting wire of linear charge density 'λ'. Draw the variation of 'E' with distance 'x'.** **(b) Electric field E in a region is given by $\vec{E}$ =(5x²+2)$\hat{i}$ where E is in N/C and x is in meters. A cube of side 10cm is placed in the region as shown in figure. Calculate (i) the electric flux through the cube (ii) the net charge enclosed by the cube.**  	**3+2**

32(I)	**(a) Consider an LCR circuit with phase difference ϕ between the instantaneous voltage and current. Derive an expression for the average power dissipated by the circuit in terms of *cos ϕ*. Under what condition an LCR circuit dissipates maximum power?** **(b)In the given figure X is a device and V_i and V_o are the input and output alternating voltage. If V_o is greater or less then V_i then name the device X. Discuss two energy losses in the device with how to minimize it.**  **OR**	**3+2**
32(II)	**(a)Derive an expression for the force per unit length between two long straight parallel current carrying conductors. Hence define SI unit of current.** **(b) You are given a low resistance R_1, a high resistance R_2 and a moving coil galvanometer. Suggest how would you use these to have a instrument that will be able to measure (i) current, (ii) potential differences. Show the above situations by drawing circuit diagrams.**	**3+2**
33(I)	**(a)Draw the ray diagram of formation of real image by a thin double convex lens. Hence derive thin lens formula.** **(b) A convex lens of focal length 10cm is placed coaxially 5cm away from a concave lens of focal length 10cm.If an object is placed 30cm in front of the convex lens, find the position of the final image formed by the combined system.** **OR**	**3+2**
33(II)	**(a) Draw the labelled ray diagram of refracting astronomical telescope in normal adjustment position. Obtain the expression for magnifying power in this position. State two drawbacks of refracting astronomical telescope.** **(b)The magnifying power of an astronomical telescope in normal adjustment is 12. The distance between objective and eyepiece is 130 cm, find the focal length of objective and eye piece.**	**3+2**

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KENDRIYA VIDYALAYA SANGATHAN, BHUBANESWAR REGION
PRE- BOARD EXAMINATION (2025-2026)
CLASS: XII
SUBJECT: BIOLOGY (044)

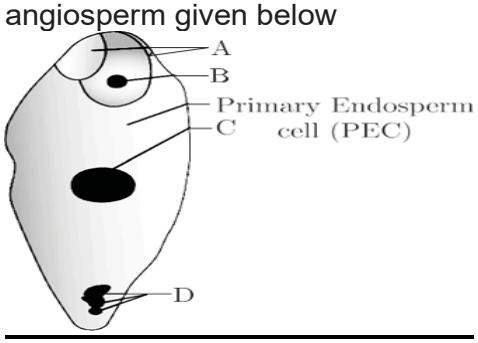
Maximum marks: 70 **Time: 3 Hours**

General Instructions:
(i) All questions are compulsory.
(ii) The question paper has five sections and 33 questions.
(iii) Section–A has 16 questions of 1 mark each; Section–B has 5 questions of 2 marks each; Section– C has 7 questions of 3 marks each; Section– D has 2 case-based questions of 4 marks each; and Section–E has 3 questions of 5 marks each.
(iv) There is no overall choice. Answer all 33 questions. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
(v) Wherever necessary, neat and properly labeled diagrams should be drawn.

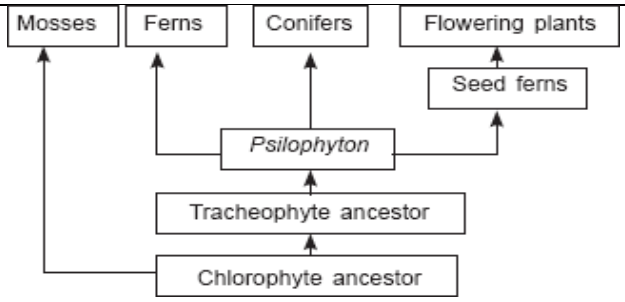
SECTION – A

Q. No. 1 to 12 are multiple choice questions. Only one of the choices is correct. Select and write the correct choices as well as the answer to these questions.

Q. NO		Marks
1	It is advantageous to use a vector having multiple cloning sites, as it (a) Contains many copy of cloned genes (b) Contains many copies of the same restriction enzyme site (c) Allows flexibility in the choice of restriction enzymes. (d) Allows flexibility in the choice of genes for cloning.	1
2	Given below are two columns. In Column I the names of four contraceptive devices are given and in Column II the modes of action of the contraceptives are given. Select the option where the contraceptive devices are correctly matched with their respective modes of action. Column I (Contraceptive devices) — Column II (Modes of action) P. Lippes loop — i. Inhibition of ovulation Q. Multiload 375 — ii. Phagocytosis of sperms in uterus R. Subcutaneous Norplant — iii. Causes thickening of cervical mucous S. Saheli — iv. Makes cervix hostile to sperms Options : (a)P-ii, Q-iv, R-iii, S-i (b) P-i, Q-ii, R-iii, S-iv (c)P-iii, Q-i, R-iv, S-ii (d) P-iv, Q-iii, R-ii, S-i	1
3	Incorrect statement is: (a) Western Ghats have a greater amphibians species diversity than the Eastern Ghats. (b) India has more than 50,000 genetically different strains of rice and 1000 varieties of mango. (c) India has greater ecosystem diversity than a Scandinavian country like Norway. (d) For many taxonomic groups, species inventories are more complete in tropical than in temperate countries.	1
4	Your teacher gave you a tall pea plant and asked you to find whether the pea plant is	1

	homozygous or heterozygous for height. You will proceed to find the genotype of the given plant by- a) Performing a cross between tall pea plant with unknown genotype with a dwarf pea plant b) Performing a cross between tall pea plant with unknown genotype with homozygous tall pea plant c) Performing a cross between homozygous tall pea plant with a dwarf pea plant d) Performing a cross between tall pea plant with unknown genotype with heterozygous tall pea plant	
5	Identify the correct labeling in the figure of a fertilized embryo sac of an angiosperm given below  (a) A – zygote, B – degenerating synergids, C – degenerating antipodals, D – PEN (b) A – degenerating synergids, B – zygote, C – PEN, D – degenerating antipodals (c) A – degenerating antipodals, B – PEN, C – degenerating synergids, D – zygote (d) A – degenerating synergids, B – zygote, C – degenerating antipodals, D – PEN	**1**
6	When a quick immune response is required due to infection of a deadly microbe, the patient is injected with (a) protein of pathogen (b) inactivated or weakened pathogen (c) preformed antibodies (d) vaccine	**1**
7	Which one of the following options is ***not*** a characteristic of polygenic inheritance? a) Have distinct alternate forms b) Dependent upon number of genes c) Additive effect of every allele **d)** Uninfluenced by environment	**1**
8	. The domestic sewage in large cities (a) Has a high BOD as it contains both aerobic and anaerobic bacteria (b) Is processed by aerobic and then anaerobic bacteria in the secondary treatment in Sewage Treatment Plants (STPs) (c) When treated is STPs does not really require the aeration step as the sewage contains adequate oxygen. (d) Has very high amount of suspended solids and dissolved salts.	**1**
9	Layers of an ovum from outside to inside is (A) Corona radiata, zona pellucida and vitelline membrane (B) Zona pellucida, corona radiata and vitelline membrane (C) Vitelline membrane, zona pellucida and corona radiata (D) Zona pellucida, vitelline membrane and corona radiata.	**1**

10	If the sequence of nitrogen bases of the coding strand in a transcription unit is 5' – ATGAATG – 3', the sequence of bases in its RNA transcript would be (a) 5' – UACUUAC – 3' (b) 5'– AUGAAUG – 3' (c) 5'– CAUUCAU – 3' (d) 5'– GUAAGUA – 3'	**1**
11	Amensalism is an association between two species where (a) One species is harmed and other is benefitted (b) One species is harmed and other is unaffected (c) One species is benefitted and other is unaffected (d) Both the species are harmed.	**1**
12	Which vitamin is present in Golden rice? (a) Vitamin D (b) Vitamin B12 (c) Vitamin C (d) Vitamin A	**1**
	In the following questions (13 to 16) a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choice. (a) Assertion and reason both are correct statements and reason is correct explanation for assertion. (b) Assertion and reason both are correct statements but reason is not correct explanation for assertion. (c) Assertion is correct statements but reason is wrong statement. (d) Assertion is wrong statements but reason is correct statement.	
13	**Assertion:** Excessive use of herbicides and pesticides has no effect on resistant varieties of microbes. **Reason :**Pathogenic bacteria are appearing in very short period of time because of chemical resistance	**1**
14	Assertion : Adenosine deaminase (ADA) deficiency causes severe disorders in humans as ADA is crucial for the immune system to function. Reason: This can be treated permanently by bone marrow transplantation in adult humans.	**1**
15	**Assertion** –In a food chain, members of successive higher levels are fewer in number **Reason** - Number of organisms at any trophic level depends upon the availability of organisms which serve as food at the lower level	**1**
16	**Assertion:** If pollen mother cells has 42 chromosomes, the pollen has only 21 chromosomes. **Reason :** Pollens are formed after meiosis in pollen mother cell.	**1**
	SECTION: B	
17	A women has certain queries as listed below, before starting with contraceptive pills. i) What do contraceptive pills contain? ii) How do they act as contraceptives? iii) What schedule should be followed for taking these pills?	**2**
18	a) State the significance of Tet^R and Bam HI in PBR-322 vector. b) Would it be able to perform colour selection of recombinants and non-recombinants? Why or why not?	**2**
19	Study the schematic representation of evolutionary history of plant forms given below and mention:	**2**



(a) The plant form Ferns and Conifers are most related to.
(b) The nearest ancestors of flowering plants.
(c) The most primitive group of plants.
(d) Common ancestry *Psilophyton* provides to.

OR

a) Select the analogous structures from the combinations given below:
   i) Forelimbs of Whales and Bats
   ii) Eyes of Octopus and Mammals
   iii) tuber of sweet potato and potato
   iv) Thorn of *Bougainvillea* and tendrils of *Cucurbita.*
b) State the kind of evolution they represent.

20 Write the correct answer for A, B, C and D in the given table? **2**

	Microbe	Product	Application
(a)	*Streptococcus*	Streptokinase	A
(b)	B	Lipase	Removal of oil stains
(c)	*Trichoderma polysporum*	C	Immuno-suppressive drug
(d)	D	Statins	Lowering of blood cholesterol

21 What is the principle of Gel electrophoresis? Name the compound used for staining DNA to be used in recombinant technology. What is the colour of such stained DNA? **2**

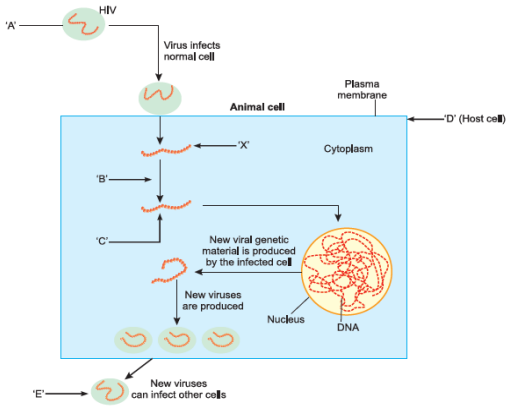
SECTION C

22 Study the diagram showing replication of HIV in humans and answer the following questions accordingly: **3**

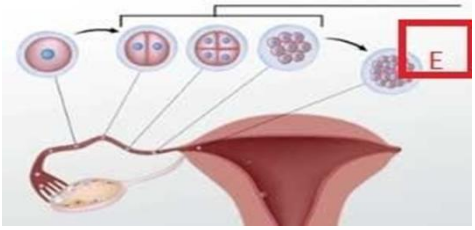
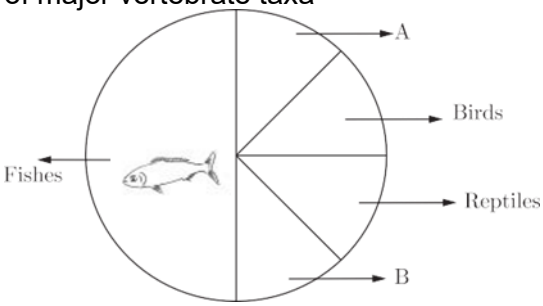
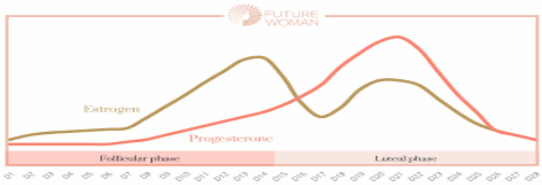
(*i*) What type of virus causes AIDS? Name its genetic material.

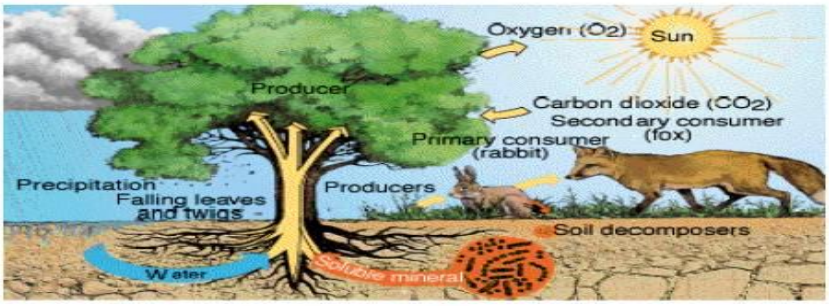
(*ii*) Name the enzyme 'B' acting on 'X' to produce molecule 'C'. Name 'C'.

(*iii*) Name the type of cells the AIDS virus enters into after getting in the human body.



23 a) List two essential roles for ribosome during translation. **3**
b) How is a polypeptide chain synthesis terminated during protein synthesis?

24	 a) Identify stage of part (E) in the given diagram. b) Describe the post –zygotic events leading to implantation in humans.	**3**
25	 (a) Write your observations on the variations seen in the Darwin's finches shown above. (b) Explain what conclusions did he draw and how.	**3**
26	a) Identify 'A' and 'B' in the figure given below representing proportionate number of major vertebrate taxa  b) Why Western Ghats in India have been declared as biological hotspots? c) Write the importance of cryopreservation in the conservation of biodiversity. OR d) The 'clown' fish lives among the tentacles of sea anemone. What is this interaction between them called and why? e) Certain species of wasps are seen to frequently visit flowering fig trees. What type of interaction is seen between them and why? f) Give two characteristic features of endoparasites.	**3**
27	Both haemophilia and thalassemia are blood related disorders in humans. a) Write their causes and the differences between the two. b) Name the category of genetic disorder they both come under.	**3**
28	Study the graph given below showing the levels of ovarian hormones during menstruation and correlate the uterine events that take place according to the hormonal levels on.  1. 6-15 days 2. 16-25 days 3. 26-28 days (if the ovum is not fertilized).	**3**
	SECTION D	

29	 Generally all of us have been vaccinated at various ages according to a schedule. Certain vaccines are taken only once and yet protection is provided for a long time or even for a lifetime in some cases. (a)What name is given to such a type of immune response? Also name the property which is responsible for it. (b)Differentiate between active immunity from that of Passive immunity. (c)What are the special types of blood cells that help to achieve this type of immunity and how?	**4**
30	An ecosystem consists of two main components: biotic components (living organisms like plants, animals, fungi, and microorganisms) and abiotic components (non-living elements such as water, air, sunlight, soil, temperature, and nutrients). These components are interdependent and constantly interact to create a balanced and self-sustaining environment.  Fig. 1.3 Role of organisms a) Write a difference between net primary productivity and gross primary productivity. b) List any two ways of measuring the standing crop of a trophic level. c) Due to uncontrolled excessive hunting, the population of tigers in a forest becomes zero. Discuss the long-term effect of this situation on the population of deer in that forest.	**4**
	SECTION E	
31	a. Give scientific reason. i. Apple and cashew are not called true fruits. ii. In most of the angiosperms endosperm development precede embryo development. Why? b. Farmers prefer Apomictic seeds than hybrid seeds. Justify. c. Mediterranean orchid Ophrys ensures its pollination by bees. How? d. A bilobed dithecous anther has 100 microspore mother cells per microsporangium. How many male gametophytes this anther can produce? OR a. What develops into a microspore mother cell in a flower? b. Trace the development of this cell into a 3 celled-pollen grain which is ready for germination. c. Draw a labelled figure of a mature pollen grain. d. Why pollen grains are preserved as fossils?	5

32	a. VNTR plays an important role in DNA fingerprinting. Justify the statement. b. Mention two important criteria for which DNA is considered as a better hereditary material than RNA. c. A template strand is given below. Write down the corresponding coding strand and the mRNA strand that can be formed along with their polarity. 3'-ATGCATGCATGCATGCATGC-5' d. Draw a schematic diagram of a transcription unit with the polarity of the DNA strand and label – coding strand, template strand, promotor &terminator OR a. Draw a schematic diagram of a Lac operon in it's switched off position. Label the following. Structural genes, repressor binding to its correct position, promotor gene & regulator gene. b. Differentiate between a cistron and an exon c. Why do hnRNA undergoes splicing and where does it take place? d. Why is it not possible an alien DNA to become a part of chromosome anywhere along its length and replicate normally?	5
33	a) Name the process involved in the production of nematode-resistant tobacco plants, using genetic engineering. b) Explain the strategy adopted to develop such plants c) Highlight any four advantages of genetically modified organisms (GMOs). OR a. Name the source from which insulin was extracted earlier. Why is this insulin no more in use? b. Why does Bt-toxin not kill the bacterium that produce it, but kills the insect that ingest it? c. Write down the two specific cry genes that encode proteins which control boll worms and corn borer. d. How Rosie is considered different from a normal cow in production of milk? e. What is ELISA? Write down the principle on which it is based.	5

SET-2

KENDRIYA VIDYALAYA SANGATHAN, BHUBANESWAR REGION
PRE BOARD- EXAMINATION (2025-26)
CLASS-XII
SUBJECT: MATHEMATICS (041)

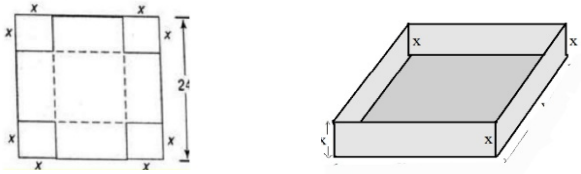
MAXIMUM MARKS-80 **MAXIMUM TIME ALLOWED:3 HOURS**

General Instructions: Read the following instructions very carefully and strictly follow them:
1. This Question paper contains 38 questions. All questions are compulsory.
2. This Question paper is divided into five Sections - A, B, C, D and E.
3. In Section A, Questions no. 1 to 18 are multiple choice questions (MCQs) with only one correct option and Questions no. 19 and 20 are Assertion-Reason based questions of 1 mark each.
4. In Section B, Questions no. 21 to 25 are Very Short Answer (VSA)-type questions, carrying 2 marks each.
5. In Section C, Questions no. 26 to 31 are Short Answer (SA)-type questions, carrying 3 marks each.
6. In Section D, Questions no. 32 to 35 are Long Answer (LA)-type questions, carrying 5 marks each.
7. In Section E, Questions no. 36 to 38 are Case study-based questions, carrying 4 marks each.
8. There is no overall choice. However, an internal choice has been provided in 2 questions in Section B, 3 questions in Section C, 2 questions in Section D and one subpart each in 2 questions of Section E.
9. Use of calculator is not allowed.

Q.NO.	**SECTION A** **This section comprises of multiple-choice questions (MCQs) of 1 mark each. Select the correct option (Question 1 - Question 18)**	MARKS
1	If projection of $\vec{a} = \alpha\hat{i} + \hat{j} + 4\hat{k}$ on $\vec{b} = 2\hat{i} + 6\hat{j} + 3\hat{k}$ is 4 units, then α is a) -13 b) -5 c) 13 d) 5	1
2	If the matrix $A = \begin{bmatrix} 0 & r & -2 \\ 3 & p & t \\ q & -4 & 0 \end{bmatrix}$ is skew-symmetric, then value of $\frac{q+t}{p+r}$ is a) -2 b) 1 c) 0 d) 2	1
3	If the points (x_1, y_1), (x_2, y_2) and $(x_1 + x_2, y_1 + y_2)$ are collinear, then x_1y_2 is equal to a) $x_2\, y_1$ b) x_1y_1 c) x_2y_2 d) $x_1\, x_2$	1
4	Let E and F be two events such that P(E)=0.1, P(F)=0.3, P(E∪F) =0.4, then P(F|E) is: a) 0.6 b) 0.4 c) 0.5 d) 0	1
5	If xy=e^{x-y}, then $\frac{dy}{dx}$ is equal to a) $\frac{x(y-1)}{y(x+1)}$ b) $\frac{x(y+1)}{y(x-1)}$ c) $\frac{y(x-1)}{x(y+1)}$ d) $\frac{y(x+1)}{x(y-1)}$	1
6	If M and N are square matrices of order 3 such that det(M)=m and MN=mI, then det(N) is equal to: a) -1 b) 1 c) $-m^2$ d) m^2	1
7	For two matrices A and B given that, $A^{-1} = \frac{1}{4}B$ then inverse of (4A) is a) 4B b) B c) $\frac{1}{4}B$ d) $\frac{1}{16}B$	1
8	If for a square matrix A, $A^2 - 3A + I = O$ and $A^{-1} = xA + yI$, then the value of x + y is: a) -2 b) 2 c) 3 d) -3	1
9	If the rate of change of volume of a sphere is twice the rate of change of its radius, then the surface area of the sphere is: a) 1 sq units b) 2 sq units c) 3 sq units d) 4 sq units	
10	In an LPP, corner points of the feasible region determined by the system of linear constraints are (1,1), (3,0) and (0,3. If $Z = ax + by$, where $a,b > 0$ is to be minimized, the condition on a and b, so that the minimum of Z occurs at (3,0) and (1,1) will be: a) $a = 2b$ b) $a = \frac{b}{2}$ c) $a = 3b$ d) $a = b$	1

11	If the feasible region of a linear programming problem with objective function Z= ax + by, is bounded, then which of the following is correct? a) it will only have a maximum value b) it will only have a minimum value c) it will have both maximum and minimum values. d) it will have neither maximum nor minimum value.	1
12	Two vectors $\vec{a}$ and $\vec{b}$ are such that $\left\|\vec{a}\times\vec{b}\right\| = \vec{a}.\vec{b}$. The angle between the two vectors is: a) 30° b) 60° c) 45° d) 90°	1
13	The domain of $f(x) = \cos^{-1}(2x)$ is: a) $[-1,1]$ b) $[-2,2]$ c) $\left[0,\frac{1}{2}\right]$ d) $\left[-\frac{1}{2},\frac{1}{2}\right]$	1
14	The sum of the order and the degree of the differential equation $\frac{d^2y}{dx^2}+\left(\frac{dy}{dx}\right)^3 = \sin y$ is: a) 5 b) 2 c) 3 d) 4	1
15	If $f(a+b-x) = f(x)$, *then* $\int_a^b x\, f(x)\, dx$ is equal to a) $\frac{a+b}{2}\int_a^b f(b-x)\, dx$ b) $\frac{a+b}{2}\int_a^b f(a-x)\, dx$ c) $\frac{b-a}{2}\int_a^b f(x)\, dx$ d) $\frac{a+b}{2}\int_a^b f(x)\, dx$	1
16	$\int e^x(\frac{1}{x} - \frac{1}{x^2})$ dx a) x e^x + c b) $\frac{e^x}{x}$ + c c) $\frac{e^x}{x^2}$+ c d) None of these	1
17	Area of the region bounded by curve $y^2 = 4x$ and the X-axis between x=0 and x=1 is: a) $\frac{2}{3}$ b) $\frac{8}{3}$ c)3 d) $\frac{4}{3}$	1
18	The integrating factor of the differential equation $\frac{dy}{dx} + y\tan x - \sec x = 0$ is: a)$-\cos x$ b) $\sec x$ c) $\log\sec x$ d) $e^{\sec x}$	1
	Assertion Reason based questions **Read both the statement carefully and choose the correct alternative from the following:** **a. Both the statement A and R are correct and R is the correct explanation of A.** **b. Both the statement A and R are correct and R is not the correct explanation of A.** **c. The statement A is correct but R is false.** **d. The statement A is false but R is correct.**	
19	Assertion(A): Domain of $\sec^{-1}2x$ is $\left(-\infty,-\frac{1}{2}\right]\cup\left[\frac{1}{2},\infty\right)$ Reasoning (R): $\sec^{-1}(-2) = -\frac{\pi}{4}$	1
20	Assertion(A): $f(x) = \begin{cases} x\sin\frac{1}{x}, & x\neq 0 \\ 0, & x = 0\end{cases}$ is continuous at x=0 Reason (R): When $x\to 0, \sin\frac{1}{x}$ is a finite value between -1 and 1.	1
	SECTION B **This section comprises of 5 very short answer (VSA) type questions of 2 marks each.**	
21	Find the value of $\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)+\cot^{-1}\left(\frac{1}{\sqrt{3}}\right)+\tan^{-1}\left(\sin\left(-\frac{\pi}{2}\right)\right)$ **OR** Find the domain of the function $f(x) = \sin^{-1}\left(x^2-4\right)$. Also, find its range.	2
22	If $y = A\sin 2x + B\cos 2x$ *and* $\frac{d^2y}{dx^2} - ky = 0$, find the value of k.	2
23	If $y = (\tan x)^x$, then find $\frac{dy}{dx}$.	2
24	If $\|\vec{a}\| = 2$, $\left\|\vec{b}\right\| = 3$ *and* $\vec{a}.\vec{b} = 4$ then evaluate $\left\|\vec{a}+2\vec{b}\right\|$.	2
25	Find the value of λ, if the points (-1, -1,2), and (3,11,6), (2,8, λ) are collinear. **OR** Find the angle between the following two lines:	2

	$\vec{r} = 2\hat{i} - 5\hat{j} + \hat{k} + \lambda(3\hat{i} + 2\hat{j} + 6\hat{k})$, $\vec{r} = 7\hat{i} - 6\hat{k} + \mu(\hat{i} + 2\hat{j} + 2\hat{k})$	
	SECTION C **This section comprises of 6 short answer (SA) type questions of 3 marks each.**	
26	Solve the following linear programming problem graphically: Maximise $z = 500x + 300y$ subject to the constraints $x + 2y \le 12$ $2x + y \le 12$ $4x + 5y \ge 20$ $x \ge 0, y \ge 0$	3
27	Two students Mehul and Rashi are seeking admission in a college. The probability that Mehul is selected is 0.4 and the probability of selection of exactly one of the them is 0.5. Chances of selection of them is independent of each other. Find the probability of selection of Rashi. Also find the probability of selection of at least one of them.	3
28	Verify that lines given by $\vec{r} = (1-\lambda)\hat{i} + (2-\lambda)\hat{j} + (3-2\lambda)\hat{k}$ and $\vec{r} = (\mu+1)\hat{i} + (2\mu-1)\hat{j} - (2\mu+1)\hat{k}$ are skew lines, Hence, find shortest distance between two lines. OR During a cricket match, the position of the bowler, the wicket keeper and the leg slip fielder are in a line given by $\vec{B} = 2\hat{i} + 8\hat{j}$, $\vec{W} = 6\hat{i} + 12\hat{j}$ and $\vec{F} = 12\hat{i} + 18\hat{j}$ respectively. Calculate the ratio in which the wicketkeeper divides the line segment joining the bowler and the leg slip fielder.	3
29	Find $\int \frac{x^2}{(x^2+9)(x^2+4)} dx$ **OR** Evaluate: $\int_1^3 (\lvert x-1\rvert + \lvert x-2\rvert + \lvert x-3\rvert)\, dx$	3
30	Find the maximum slope of the curve $y = -x^3 + 3x^2 + 9x - 30$.	3
31	Find the intervals in which the function $f(x) = \frac{3}{2}x^4 - 4x^3 - 45x^2 + 51$ is (a) strictly increasing (b) strictly decreasing **OR** Find the intervals in which the function $f(x) = \frac{\log x}{x}$ is strictly increasing or strictly decreasing	3
	SECTION D **This section comprises of 4 long answer (LA) type questions of 5 marks each**	
32	A furniture workshop produces three types of furniture- chairs, tables and beds each day. On a particular day the total number of furniture pieces produced is 45. It was also found that production of beds exceeeds that of chairs by 8, while the total production of beds and chairs together is twice the productionof tables. Determine the units produced of each type of furniture, using matrix method.	5
33	Find the area of the region bounded by the lines $x - 2y = 4, x = -1, x = 6$ and x-axis, using integration.	5
34	If $\sqrt{1-x^2} + \sqrt{1-y^2} = a(x-y)$, then prove that $\frac{dy}{dx} = \sqrt{\frac{1-y^2}{1-x^2}}$ **OR** If $y = \cos x^2 + cos^2 x + cos^2 x^2 + \cos(x^x)$, find $\frac{dy}{dx}$.	5

35	Find the co-ordinates of the foot of the perpendicular drawn from the point (2,3, -8) to the line $\frac{4-x}{2}=\frac{y}{6}=\frac{1-z}{3}$ .Also, find the perpendicular distance of the given point from the line. **OR** Equation of sides of a parallelogram ABCD are as follows: AB: $\frac{x+1}{1}=\frac{y-2}{-2}=\frac{z-1}{2}$ BC: $\frac{x-1}{3}=\frac{y+2}{-5}=\frac{z-5}{3}$ CD: $\frac{x-4}{1}=\frac{y+7}{-2}=\frac{z-8}{2}$ DA: $\frac{x-2}{3}=\frac{y+3}{-5}=\frac{z-4}{3}$ Find the equation of diagonal BD.	5
	SECTION E **This section comprises of 3 case-study/passage-based questions of 4 marks each with subparts.**	
36	 A school is organizing a debate competition with participants as speakers $S = \{S_1,S_2,S_3,S_4\}$ and these are judged by judges $J = \{J_1,J_2,J_3\}$. Each speaker can be assigned one judge. Let R be a relation from set S to set J defined as R = {(x, y): speaker x is judged by judge y, x ϵS, y ϵ J} Based on the above, answer the following: (i) How many relations can be there from S to J? (ii) A student identifies a function from S to J as $f = \{(S_1,J_1),(S_2,J_2),(S_3,J_2),(S_4,J_3)$ Check if it is bijective. (iii) How many one-one function can be there from set S to set J? (iv) Another Student considers a relation $R_1 = \{(S_1,S_2),(S_2,S_4)\}$ in set S. Write minimum ordered pairs to be included in R_1 so that R_1 is reflexive but not symmetric.	1 1 1 1
37	A square sheet of tin of side 24 cm is to made into a box without top, by cutting a square from each corner and folding up the flaps to form the box as shown below with height 'x' cm.  (i) Find the volume V of open box expressed as a function of 'x'. (ii) Find the side of the square to be cut off from the corner of tin sheet so that the volume of the box is the maximum is possible? (iii) (a) Find maximum value of volume V **OR** (b)How much area of the tin sheet has been used for making in box of maximum Volume?	1 1 2

38	A building contractor undertakes a job to construct 4 flats on a plot along with parking area. Due to strike the probability of many construction workers not being present for the job is 0.65. The probability that many are not present and still the work gets completed on times is 0.35. The probability that work will be completed on time when all workers are present is 0.80. Let: E_1: represent the event when many workers were not present for the job; E_2: represent the event when all workers were present; and E: represent completing the construction work on time. Based on the above information. answer the following questions: (i) What is the probability that all the workers are present for the job? (ii) What is the probability that construction will be completed on time? (iii) (a) What is the probability that many workers are not present given that the construction work is completed on time? **OR** (iii) (b) What is the probability that all workers were present given that the construction job was completed on time.	 1 1 2