

केंद्रीय विद्यालय संगठन(राँची संभाग)

द्वितीय प्री-बोर्ड परीक्षा – (2025-26)

विषय – हिन्दी

कक्षा - दसवीं

समय : 3:00 घंटा

पूर्णांक : 80

अंक योजना

प्रश्न 1 ((1+1+1+2+2))

1. (iii) कथन (A) सही है और कारण (R) कथन (A) का सही व्याख्या है।
2. (i) कथन I, II और IV सही हैं।
3. (ii) I (1), II (2), III (3)
4. अवचेतन मनुष्य एक ताकतवर नियंत्रित यंत्र के समान होता है। यह जीवन के प्रारंभिक दिनों से लेकर अब तक के रिकॉर्ड किए अनुभवों को दोहराता है। इसमें रचनात्मकता नहीं होती। यह उन विचारों और सहज स्वभाव को भी नियंत्रित करता है जो हमारी आदत बन चुके हैं।
5. लेखक अभिमन्यु की चर्चा के माध्यम से यह प्रतिपादित करना चाहता है कि अवचेतन मस्तिष्क जन्म के थोड़े पहले माँ के पेट में ही सीखना शुरू कर देता है। उस समय उसे सही-गलत का ज्ञान नहीं होता, केवल अपने स्वभाव के अनुसार आसपास की गतिविधियों को ग्रहण कर लेता है, जो बाद में उसके जीवन का आधार बन जाते हैं।

प्रश्न संख्या 2 ((1+1+1+2+2))

(1) (क) क्योंकि ईश्वर समानता स्थापित न कर पाया ।

(2) (ग) कथन (A) सही है और कारण (R) कथन (A) की सही व्याख्या है।

(3) (ख) केवल I, III और IV सही हैं।

(4) कवि आह्वान करता है कि – “हे मनुष्य, तुममें अपार शक्ति का भंडार है। अतः तू अपने अधिकारों के प्रति जागरूक हो, कर्मशील बनो और अत्याचारियों को समाप्त कर दो।”

(5) जब मनुष्य अखंड शक्ति के भंडार को पहचान ले और स्वयं पर विश्वास कर कर्मशील हो जाए, तब वह स्वयं जगतपति बन सकता है।

खंड ख - व्यावहारिक व्याकरण

प्रश्न संख्या 3 ((1+1+1+1+)

(1) वह स्टेडियम गया और क्रिकेट मैच देखा।

(2) बच्चे को खिलौना मिलते ही वह चुप हो गया।

(3) मन्नू जी की जो साहित्यिक उपलब्धियाँ हैं, उनके लिए अनेक पुरस्कार प्राप्त हो चुके हैं।

(4) आश्रित उपवाक्य: “जो शांति बरसती थी”

भेद: विशेषण उपवाक्य – यह वाक्य के किसी अंग की विशेषता बताता है।

(5) संयुक्त वाक्य।

प्रश्न संख्या 4. ((1+1+1+1+)

(1) कर्तृवाच्य: इस दिन दालमंडी में शहनाई बजती थी।

(2) कर्मवाच्य: पतोहू द्वारा आग दी गई।

(3) कर्तृवाच्य: अब सो नहीं सकता।

(4) भाववाच्य: उससे खेला जाएगा।

(5) मैनाओं के द्वारा गीत सुनाया गया।

प्रश्न संख्या 5. ((1+1+1+1+)

(1) नया: विशेषण, गुणवाचक, 'पान' विशेष्य का विशेषण, पुल्लिंग, एकवचन, भूतकाल।

(2) यह: सार्वनामिक विशेषण, एकवचन, स्त्रीलिंग, वर्तमान काल कर्ता कारक।

(3) माँ की: संज्ञा, जातिवाचक, स्त्रीलिंग, एकवचन, संबंध कारक।

(4) सदा ही: अव्यय, क्रियाविशेषण, कालवाचक, 'सुनने' क्रिया के काल का सूचक; 'ही' निपात।

(5) वह: सर्वनामिक विशेषण, पुल्लिंग, एकवचन, 'बच्चा' विशेष्य, वर्तमान काल।

प्रश्न संख्या 6 (1+1+1+1+)

(1) रूपक अलंकार

(2) उपमा अलंकार

(3) उत्प्रेक्षा अलंकार

(4) मानवीकरण अलंकार

(5) उत्प्रेक्षा अलंकार

खंड ग - (पाठ्यपुस्तक)

प्रश्न संख्या 7 (1+1+1+1+1)

- 1- (ग) विकल्प : मूर्ति पर संगमरमर के चश्मे के न होने पर रियल चश्मा लगाने का प्रयास सराहनीय था।
- 2- (ग) उसमें निहित भावना
- 3- (घ) मज़ाक की चीज़
- 4- (घ) मूर्ति का चश्मा दूसरा है।
- 5- (ग) मूर्ति कपड़े नहीं बदल सकती है।

प्रश्न संख्या 8 (2+2+2)

- (1) मन्नू भंडारी के पिता के स्वभाव में क्रोध और शुष्कता इसलिए आई क्योंकि उन्हें अपने ही लोगों से विश्वासघात मिला, अजमेर में उनकी आर्थिक स्थिति बिगड़ गई, अधूरी महत्वाकांक्षाओं ने उन्हें कठोर बना दिया।
- (2) नवाब साहब ने लेखक से बातचीत की उत्सुकता नहीं दिखाई, क्योंकि वे अपने सामाजिक दर्जे के अहंकार में थे। जब लेखक ने उपेक्षा की प्रतिक्रिया में उपेक्षा दिखाई, तो यह उसके आत्म-सम्मान का प्रतीक था।
- (3) बिस्मिल्ला खाँ ने सर पर आना बचपन में सीखा। वे संगीतपूर्ण वातावरण में पले-बढ़े और अपने मामू अली बख्श के शहनाई वादन को सुनकर निरंतर अभ्यास करते हुए संगीत में निपुण हो गए।
- (4) बालगोबिन भगत के लिए संगीत केवल मनोरंजन या शांति का साधन नहीं था। वह उनके लिए आत्मा को परमात्मा से जोड़ने का माध्यम था। उनका संगीत भक्ति और साधना का प्रतीक था, जो श्रोताओं के हृदय को स्पंदित कर देता था।

प्रश्न संख्या 9 (1+1+1+1+1)

- (1) (क) मित्रों द्वारा आत्मकथा लिखने को कहना
- (2) (क) अपने सरल स्वभाव के कारण
- (3) (घ) उज्ज्वल गाथा के
- (4) (क) प्रेयसी के साथ बिताए मधुर पल
- (5) (क) जयशंकर प्रसाद

प्रश्न संख्या 10 (2+2+2)

क्षितिज पाठ्यपुस्तक के पाठों में वर्णित अध्ययन सामग्री के आधार पर शिक्षक स्वयं निर्णय लें।

प्रश्न संख्या 11 (4+4)

कृतिका पाठ्यपुस्तक के पाठों में वर्णित अध्ययन सामग्री के आधार पर शिक्षक स्वयं निर्णय लें।

खंड घ रचनात्मक लेखन (6+5+5+4)

प्रश्न संख्या 12 6 अंक

विषयवस्तु 3+ भाषा 2+ प्रस्तुतीकरण 1

प्रश्न संख्या 13 5 अंक

प्रारूप 2+विषयवस्तु 2+ भाषा 1

प्रश्न संख्या 14 5 अंक

प्रारूप 2+विषयवस्तु 2+ भाषा + 1

प्रश्न संख्या 15. 4 अंक

प्रारूप 2 + भाषा +1 + विषयवस्तु + 1

केन्द्रीय विद्यालय संगठन (राँची संभाग)
KENDRIYA VIDYALAYA SANGATHAN (RANCHI REGION)
SECOND PRE-BOARD EXAMINATION
CLASS X (2025-26)
ARTIFICIAL INTELLIGENCE 417

Max. Marks: 50

Time: 2 Hours

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 contains Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (5 + 16 =) 21 questions, a candidate has to answer (5 + 10 =) 15 questions in the allotted (maximum) time of 2 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A - OBJECTIVE TYPE QUESTIONS (24 MARKS):**
 - i. This section has 05 questions.
 - ii. Marks allotted are mentioned against each question/part.
 - iii. There is no negative marking.
 - iv. Do as per the instructions given.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
 - i. This section has 16 questions.
 - ii. A candidate has to do 10 questions.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.

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.	1. During a group task, a student dominates every discussion. What should the others do for effective communication? (a) Ignore the student (b) Request politely to allow others to speak (c) Stop the discussion (d) Leave the group	1
ii.	Which one of these is the shortcut command to paste a copied document. (a) Ctrl + X (b) Ctrl + C (c) Ctrl + V (d) Ctrl + Z	1
iii.	Which one of these is a sign of positive self-motivation? (a) Procrastination (b) Avoidance (c) Laziness (d) Initiative	1
iv.	Which green initiative will help reduce paper usage in school? (a) Double-side print (b) Digital resources (c) Use large papers (d) Reuse old notebooks	1
v.	An entrepreneur should first ____ before launching a product. (a) Do market research (b) Start selling (c) Buy materials (d) Promote online	1
vi.	An _____ manages the computer memory and keeps track of which memory space is in use by which program and which space is free.	1

	(a) operating system (c) Anti-virus software	(b) Application software (d) Microsoft word	
Q. 2	Answer any 5 out of the given 6 questions (1 x 5 = 5 Marks)		
i.	Which of the following is an AI application in education? (a) Smart board (c) Whiteboard	(b) Personalized learning system (d) Projector	1
ii.	AI models are trained using ____ data. (a) Random (c) Labeled or Unlabeled	(b) Number (d) None	1
iii.	The step of evaluating model performance comes under ____ stage. (a) Model evaluation (c) Data collection	(b) Model training (d) Problem scoping	1
iv.	A chatbot that gives responses using predefined rules is an example of ____. (a) Learning-based AI (c) Unsupervised AI	(b) Rule-based AI (d) Deep Learning	1
v.	Which of these terms are related to unsupervised learning? (a) Clustering (c) Association	(b) Regression (d) Both a and c	1
vi.	Reinforcement learning works by using ____. (a) Rewards and penalties (c) Labeled data	(b) Rules (d) None	1
Q. 3	Answer any 5 out of the given 6 questions (1 x 5 = 5 Marks)		
i.	Which metric shows the percentage of correct predictions? (a) Accuracy (c) Recall	(b) Precision (d) F1 Score	1
ii.	A confusion matrix helps to evaluate ____ models. (a) Classification (c) Regression	(b) Clustering (d) Rule-based	1
iii.	Model accuracy = $(TP+TN)/(TP+TN+FP+FN)$. (True/False)		1
iv.	Which metric is more useful for imbalanced data? (a) Accuracy (c) F1 Score	(b) Precision (d) Recall	1
v.	Bias, transparency, and accountability are concerns of which AI stage? (a) Modelling (c) Deployment	(b) Data (d) Evaluation	1
vi.	A model performs well on training but poorly on test data. It indicates ____. (a) Underfitting (c) Balanced model	(b) Overfitting (d) None	1
Q. 4	Answer any 5 out of the given 6 questions (1 x 5 = 5 Marks)		
i.	AI-powered CCTV that detects intruders uses which AI domain? (a) CV (c) Statistical	(b) NLP (d) Ethical Framework	1
ii.	A sentiment analysis tool can determine whether a piece of text is positive, negative, or neutral. (True/False)		1
iii.	Expand TF-IDF .		1
iv.	A corpus contains 50 documents. How many document vectors will be there for that corpus? (a) 25 (b)1 (c)50 (d)1/25		1

v.	Rita wants to a Stem a word 'playing'. Help her to choose one of the following option to get the correct stem word of playing. (a) Played (b) Playi (c) Player (d) Play	1
vi.	Which layer in CNN extracts features from the input image? (a) Convolution (b) Pooling (c) Fully connected (d) None	1
Q. 5	Answer any 5 out of the given 6 questions (1 x 5 = 5 Marks)	
i.	Which stage of the AI project cycle involves identifying the real-world problem? (a) Data acquisition (b) Problem scoping (c) Evaluation (d) Deployment	1
ii.	Which of the following ensures that AI solutions are developed responsibly? (a) AI Bias (b) Testing (c) Data Labeling (d) Ethical Framework	1
iii.	Which of these is a correct example of defining success criteria in AI? (a) Deciding team roles (b) Collecting data (c) Setting model accuracy target (d) Deploying model	1
iv.	Which of the following is NOT part of the AI project cycle? (a) Data acquisition (b) Model training (c) Deployment (d) Algorithm shopping	1
v.	AI bias occurs mainly due to _____. (a) Incorrect code (b) Unbalanced dataset (c) Model accuracy (d) Hardware issue	1
vi.	An AI model trained only on one region's data fails elsewhere due to lack of _____. (a) Generalization (b) Precision (c) Accuracy (d) Recall	1

SECTION B: SUBJECTIVE TYPE QUESTIONS

Answer any 3 out of the given 5 questions on Employability Skills (2 x 3 = 6 Marks)

Answer each question in 20 – 30 words.

Q. 6	Explain the importance of active listening in communication.	2
Q. 7	Define entrepreneurship and mention one innovative idea that uses AI for social good.	2
Q. 8	During an AI group project, you feel stressed about deadlines. Mention two strategies you can use to manage your stress effectively.	2
Q. 9	Your teacher asks you to create a digital presentation for an AI project. List two software tools you can use and one precaution to follow while sharing it online.	2
Q. 10	Suggest two ways in which Artificial Intelligence can help schools adopt environmentally sustainable practices.	2
Answer any 4 out of the given 6 questions in 20 – 30 words each (2 x 4 = 8 Marks)		
Q. 11	Explain the importance of splitting data into training and testing sets.	2
Q. 12	What are the main components of Computer Vision? Describe any two.	2
Q. 13	Define Precision, Recall and F1 Score with formula.	2
Q. 14	A company develops an AI hiring system that rejects female candidates more often than male ones even though both have similar skills. Using the principles of bioethics, explain two ethical violations in this case and suggest one corrective action.	2
Q. 15	You are building a chatbot to answer student queries about homework. Explain which type of AI model (Rule-based / Learning-based) you would choose and justify it with one advantage and limitation.	2
Q. 16	Define Natural Language Processing. Mention two real-life applications of NLP in daily life.	2

Answer any 3 out of the given 5 questions in 50– 80 words each (4 x 3 = 12 Marks)

Q. 17	Explain the difference between Supervised, Unsupervised, and Reinforcement Learning with one real-life example of each.	4													
Q. 18	A dataset of fruit images is given without any labels. The model groups similar fruits together automatically. Identify the type of learning, algorithm category, and explain how this model discovers patterns.	4													
Q. 19	Explain all stages of the AI Project Cycle with an example of developing an AI-based attendance system for schools.	4													
Q. 20	What is a document vector table? What do you mean by corpus? Given four documents: Document 1: We are going to Mumbai Document 2: Mumbai is a famous place. Document 3: We are going to a famous place. Document 4: I am famous in Mumbai. Create a simple Document vector table using Bag of Words model.	4													
Q. 21	An AI model for disease detection gives the following results: <table border="1"><tr><th colspan="2" rowspan="2">Confusion Matrix</th><th colspan="2">Reality</th></tr><tr><th>Yes</th><th>No</th></tr><tr><th rowspan="2">Predicted</th><th>Yes</th><td>45</td><td>5</td></tr><tr><th>No</th><td>10</td><td>40</td></tr></table> (i) How many total tests have been performed in the above scenario? (ii) Calculate Precision, Recall and F1 Score and interpret what these values imply about the model's reliability..	Confusion Matrix		Reality		Yes	No	Predicted	Yes	45	5	No	10	40	4
Confusion Matrix				Reality											
		Yes	No												
Predicted	Yes	45	5												
	No	10	40												

MARKING SCHEME
SOCIAL SCIENCE (087)
CLASS X (2025-26)

Time Allowed:3hrs

Max Marks:80

	SECTION A HISTORY (20 marks)	
1.	(B). (i), (ii), (iii), and (iv)	1
2.	(C) Dandi March	1
	Answer for question of Visually Impaired Candidates only in lieu of Q.No.2 Ans-(D) He practiced open defiance of law; peaceful demonstration, satyagraha and non-violence.	
3.	(A)Widespread Poverty and Deadly diseases	1
4.	(D)Raja Ram Mohan Rao.	1
5.A	i. It is believed that Arab traders took pasta to fifth-century Sicily, an island now in Italy. ii. It is believed that noodles travelled west from China to become spaghetti.	(1+1=2)
	OR	
5.B.	i. The Indian subcontinent was central to trade networks before European intervention because it was the hub of the Indian Ocean trade. Goods, people, customs and knowledge regularly moved through its ports. ii. India exported textiles and spices, and in return received precious metals like gold and silver, making it a crucial point in global trade flows.	(1+1=2)
6.A.	The First World War created a dramatically new economic situation in India: (i) Manchester imports into India declined as the British mills were busy with war production to meet the needs of the army paving the way for the Indian mills to supply for the huge home market. (ii) As the war prolonged, Indian factories were called upon to supply war needs. As a result new factories were set up, new workers were employed and everyone was made to work longer hours.	(1+1+1=3)

	(iii) Cotton production collapsed and exports of cotton cloth from Britain fell dramatically after the war, as it was unable to modernize and compete with US, Germany, Japan. Hence within colonies like India, local industrialists gradually consolidated their position capturing the home market.	
	OR	
6.B.	Swaraj for the plantation workers were: i. For the plantation workers in Assam, it was the right to move freely from the enclosed spaces they were in and being able to connect to their villages. ii. Through the Inland Emigration Act, they were rarely given permission to get out of the tea plantations. iii. When they heard of non-cooperation, they left these plantations and thought that Gandhi would give them land.	(1+1+1=3)
Q.7. A.	Role of the peasants in Awadh in the Non-cooperation Movement: 1. In Awadh, the peasants' movement was led by Baba Ramchandra—a Sanyasi who had earlier worked in Fiji as indentured labour. 2. The movement was against taluqdars and landlords who demanded high rents from the peasants. Peasants had to do 'bega/ and work at landlords' farms without any payment. As tenants, they had no security of tenure and could be evicted without any notice. 3. The peasants' movement demanded reduction of revenue, abolition of begar and social boycott of these landlords. 4. In many places Nai-Dhobi bandits were organized to deprive landlords of the services of even washermen and barbers. 5. In 1920, Jawahar Lai Nehru began talking to the villagers and formed 'Oudh Kisan Sabha'. Within a month 300 branches had been setup in the villages.	(1+1+1+1+1=5)

Q.7.	Mahatma Gandhi found in salt a powerful symbol that could unite the nation. 1. On 31st January, 1930 he sent a letter to Viceroy Irwin stating eleven demands, one of which was the demand to abolish Salt Tax. 2. Salt was one of the most essential food items consumed by the rich and poor alike and a tax on it was considered an oppression on the people by the British Government. 3. Mahatma Gandhi's letter was an ultimatum and if his demands were not fulfilled by March 11, he had threatened to launch a civil disobedience campaign. 4. So, Mahatma Gandhi started his famous Salt March accompanied by 78 of his trusted volunteers. The march was over 240 miles, from Gandhiji's ashram in Sabarmati to the Gujarati coastal town of Dandi. 5. The volunteers walked for 24 days, about 10 miles a day. Thousands came to hear Mahatma Gandhi wherever he stopped, and he told them what he meant by Swaraj and urged them to peacefully defy the British. 6. On 6th April, he reached Dandi, and ceremonially violated the law, manufacturing salt by boiling sea water. This marked the beginning of the Civil Disobedience Movement. (Any 5 points)	(1+1+1+1+1=5)
Q.8.	i. James Augustus Hickey published the Bengal Gazette in 1780. ii. Nationalist newspapers criticized British policies, promoted freedom struggles, and encouraged political awareness. iii. The British introduced the Vernacular Press Act in 1878 to censor Indian-language newspapers and suppress anti-British sentiments. It aimed to control the vernacular press, which was seen as a major platform for spreading nationalist ideas and mobilizing public opinion against colonial rule.	(1+1+2=4)
Q.9.	(A. Nagpur (B). Amritsar	(1+1+2)
	SECTION B GEOGRAPHY(20marks)	

Q.10.	(B) Mahatma Gandhi	1
Q.11.	(D) Demarcation of Wildlife Sanctuaries	1
Q.12.	(D) Multi-purpose projects lead to large-scale displacements and loss of livelihood.	1
Q.13.	(D)A-IV, B-III, C-I, D-II	1
Q.14.	(D) Andaman Nicobar islands have important wind farms.	1
Q.15.	(A)Market and services	1
Q.16.	i. Almost everything we use, from a tiny pin to a towering building or a ship, all are made from minerals. All means of transport are manufactured from minerals and run on power resources derived from the earth. ii .Even the food that we eat contains minerals. Human beings have used minerals for their livelihood, decorations, festivities and in all stages of development.	(1+1=2)
Q.17A	Agriculture and industry in India are inseparable or interdependent on each other: 1. Agro-industries in India have boosted agriculture by raising its productivity. 2. Industries depend on agriculture for their raw materials, e.g. cotton textile industry. 3. Industries provide many agricultural inputs like irrigation pumps, fertilisers, insecticides, PVC pipes, machines and tools etc. to the farmers. 4. Manufacturing industries have assisted agriculturists to increase their production and also made the production processes very efficient. 5. Development of different modes of transport by industrial sector has not only helped farmers to obtain agricultural inputs but has also helped them trade their products.	(1+1+1+1+1=5)
	OR	
Q.17B	The Textile industry occupies a unique position in the Indian Economy because: 1. It contributes significantly to industrial production (14%).	(1+1+1+1+1=5)

	2. It employs largest number of people after agriculture, i.e. 35 million persons directly. 3. Its share in the foreign exchange earnings is significant at about 24.6%. 4. It contributes 4% towards GDP. 5. It is the only industry in the country which is self-reliant and complete in the value chain, i.e., from raw material to the highest value added products.	
Q.18.	18.i Answer: M.K. Gandhi 18.ii Answer:- Land for landless villagers' livelihood. 18.iii. Answer:- Bhoodan means voluntary donation of individual land to landless people. And Gramdan means Voluntary donation of entire villages' land for community distribution.	(1+1+2=4)
Q.19.	I.(A) Sardar Sarovar in Gujrat OR (B) Hirakund Dam in Odisha II.(A) Kandla (B) Indira Gandhi International Airport OR (C) Chhatrapati Shivaji International Airport	(1+2=3)
	SECTION C POLITICAL SCIENCE (20marks)	
Q.20.	(A) i, ii, iii	1
Q.21.	(B) State government want more power	1
	For blind students Answer: (A) B and C	
Q.22.	Option(B) Both A and R are true, but R is not the correct explanation of A. Explanation: Political parties are highly visible in a democracy because they are closely associated with democratic processes, such as elections. However, this visibility is not solely due to their role in representing social divisions or promoting partisan interests.	1
Q.23.	Option (B) Both A and R are true, but R is not the correct explanation of A. Explanation: Political parties are highly visible in a democracy because they are closely associated with democratic processes, such as elections. However, this visibility is not solely due to their role in representing social divisions or promoting partisan interests.	1

Q.24.	i. A community government is one in which different social groups are given the power to handle the affairs related to their communities. ii. They are expected to work jointly for the benefit of the common masses without undermining any one community.	(1+1=2)
Q.25.	(i) Coming together federations – USA (ii) Holding together federations – India.	(1+1=2)
Q.26.	Examples to illustrate that dignity and freedom of citizens are best guaranteed in a democracy: (i) Dignity of women. Democracy recognizes dignity of women as a necessary ingredient of society. The one way to ensure that women related problems get adequate attention is to have more women as elected representatives. To achieve this, it is legally binding to have a fair proportion of women in the elected bodies. Panchayati Raj in India has reserved one-third seats in local government bodies for women. In March 2010, the Women's Reservation Bill was passed in the Rajya Sabha ensuring 33% reservation for women in Parliament and State legislative bodies. (ii) Democracy has strengthened the claims of disadvantaged and discriminated castes. When governments are formed, political parties usually take care that representatives of different castes and tribes find a place in it. Some political parties are known to favour some castes. Democracy provides for equal status and opportunities for all castes. (iii) Democracy transforms people from the status of a subject into that of a citizen. A democracy is concerned with ensuring that people will have the right to choose their rulers and people will have control over the rulers. Whenever possible and necessary, citizens should be able to participate in decision-making that affects them all.	(1+1+1+1=3)
Q.27.	Since parties are the most visible face in a democracy, people blame them for whatever is wrong with the working of democracy. There are four major areas where the working of political parties faces challenge: (i) Lack of internal democracy. There is concentration of power in one or a few leaders at the top. Parties do	(1+1+1+1+1=5)

	not keep membership registers, do not hold organisational meetings and do not conduct internal elections regularly. More than loyalty to party principles and policies, it is personal loyalty which becomes more important. The leaders assume greater power to make decisions in the name of the party. Since one or few leaders exercise paramount power in the party, those who disagree with leadership find it difficult to continue in the party. (ii) Dynastic succession. In many parties, top positions are always held by members of one family. Most political parties do not practice transparent and open procedures for their functioning and it is very difficult for an ordinary worker to rise to the top. This is bad for democracy, since people who do not have adequate experience or popular support come to occupy positions of power. (iii) Money and muscle power. Since parties are focussed only on winning elections, they tend to use short-cuts to win elections. They nominate candidates who have or can raise money and thus are able to have influence on the policies and decisions of the party. (iv) No meaningful choice. There has been a decline in the ideological differences among parties. They agree more on fundamental aspects, but differ only in details, on how policies are to be framed and implemented. Sometimes people cannot even elect different leaders as the same set of leaders keep shifting from one party to another.	
	OR	
Q.27.B.	Five suggestions made to reform the political parties: 1. Law to regulate the internal affairs of political parties like maintaining a register of its members, to follow its own constitution, to have independent authority, to act as judge in case of party dispute, to hold open elections to the highest post. 2. It should be mandatory for political parties to give one-third tickets to women candidates. Also there should be quota for women on the decision-making bodies of the party.	5

	3. There should be state funding of elections. The government should give money to parties to support their election expenses in kind (petrol, paper, telephone, etc.) or in cash on the basis of votes secured by the party in the previous election. 4. The candidate should be educated, so that he can solve and understand people's problems. His previous record should be cleared. He should be honest and there should be no criminal case against him. 5. Citizens can reform politics if they take part directly and join political parties. People can put pressure on political parties through petitions, publicity in media, agitations etc.	
Q.28.	28.1. Women do all work inside the home such as cooking, cleaning, washing clothes, tailoring, looking after children, etc., and men do all the work outside the home. It is not that men cannot do housework; they simply think that it is for women to attend to these things. This kind of division of work is known as sexual division of labour. 28.2. A woman or a man who believes in equal rights and opportunities for women and men. 28.3. The literacy rate among women is only 54 per cent compared with 76 per cent among men. Proportion of women among the highly paid and valued jobs, is still very small. Parents prefer to have sons and find ways to have the girl child aborted before she is born.	(1+1+2=4)
	SECTION D ECONOMICS (20 marks)	
Q.29.	(C) The average income is the same as per capita income.	1
Q.30.	(D) (i) and (iv)	1
Q.31.	(A) Among agricultural workers working for small farm lands	1
Q.32.	(C) Only Reserve Bank of India can issue currency notes.	1
Q.33.	(A) Interest Rate and Collateral	1
Q.34.	(D) World Trade Organisation	1
Q.35.	1. Total income is not a useful measure for comparison between countries. Since countries have different populations, comparing total income does not tell what an average person is likely to earn. Hence, we use average income	(1+1+1=3)

	which is total income of the country divided by total population. 2. The defect of average as a measure is that it does not show the distribution (dispersion) of income between the rich and the poor. 3. Two countries may have the same average income but in one country almost every family may enjoy more or less the same kind of income, whereas in the other, some may be very rich and others very poor. The disparity between rich and poor is an important feature that the average measure (per capita income) does not consider. Example: In terms of development, we can take the example of India, where the metro towns are full of high-rise buildings and shopping malls while some villages have not yet been provided with a basic necessity like electricity.							
Q.36.	i. Modern forms of money include paper notes and coins. ii. Rupee is widely accepted as a medium of exchange because: It is authorised by the government of India. iii. The law legalises the use of rupee as a medium of payment and settling the transactions. Thus no one can refuse a payment made in rupees.	(1+1+1=3)						
Q.37.	i. Technology : One of the primary factors that has accelerated the globalisation process is rapid technological advancement. ii. Trade Liberalisation: Government-imposed trade restrictions are known as trade barriers iii. Foreign Investment Policy:	(1+1+1=3)						
Q.38.A	<table><tr><td>Aspect</td><td>Organised Sector</td><td>Unorganised Sector</td></tr><tr><td>Definition</td><td>Comprises enterprises and workers registered with government and</td><td>Consists of small-scale, unregistered enterprises and workers not governed</td></tr></table>	Aspect	Organised Sector	Unorganised Sector	Definition	Comprises enterprises and workers registered with government and	Consists of small-scale, unregistered enterprises and workers not governed	(1+1+1+1+1=5)
Aspect	Organised Sector	Unorganised Sector						
Definition	Comprises enterprises and workers registered with government and	Consists of small-scale, unregistered enterprises and workers not governed						

		following formal rules and regulations.	by formal rules.	
	Employment Type	Workers usually have regular jobs with formal contracts.	Employment is often casual, temporary, or without contracts.	
	Work Conditions	Generally better working conditions, fixed working hours, and social security benefits.	Poor working conditions, irregular working hours, and no social security benefits.	
	Regulation	Governed by laws related to labor welfare, tax, safety, etc.	Largely outside the control of government regulations.	
	Examples	Government departments, large companies, banks, factories.	Street vendors, small artisans, casual laborers, small-scale farmers.	
	Contribution to GDP	Significant contribution to the	Makes a substantial contribution	

		country's formal GDP.	but is often underreported.	
	OR			
Q.38.B	(i) Basic services : In any country, several services such as hospitals, educational institutions, post and telegraph services, police stations, courts, village administrative offices, municipal corporations, defence, transport, banks, insurance companies, etc., are required. These can be considered as basic services. In a developing country, the government has to take the responsibility for the provision of these services. As more and more people are being employed to provide the basic services to the people, the share of the tertiary sector in the Gross Domestic Product, the GDR is increasing. (ii) Development of means of transport and communication : The development of agriculture and industry leads to the development of services such as transport, communication, trade, etc. All these are under the tertiary sector. (iii) More income more services : The per capita income in our country is rising. As the income level rises, people demand more services like tourism, shopping centres, schools, professional training centres, banks, etc. (iv) New services : With modernisation and globalisation, some new services based on information and communication technology have become important and essential. The production of these services has been rising rapidly.			(1+1+1+1+1=5)

KENDRIYA VIDYALAYA SANGATHAN, RANCHI REGION
PRE BOARD QUESTION PAPER (2025-26)
CLASS- X SUBJECT - SCIENCE

Max. Marks: 80

Time Allowed: 3 hours

General Instructions:

This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.

All questions are compulsory. However, an internal choice is provided in some questions.

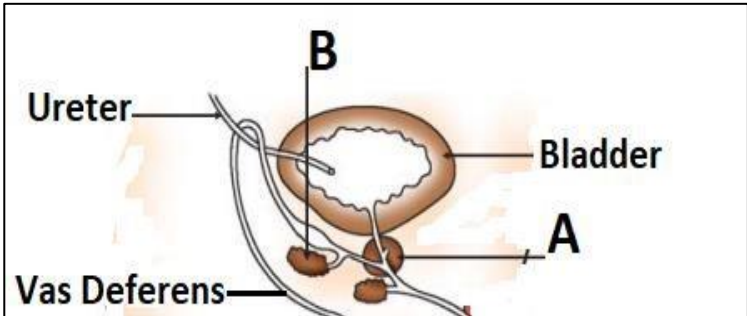
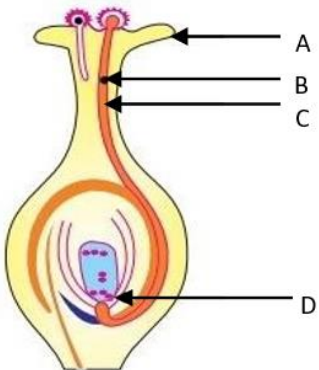
A student is expected to attempt only one of these questions.

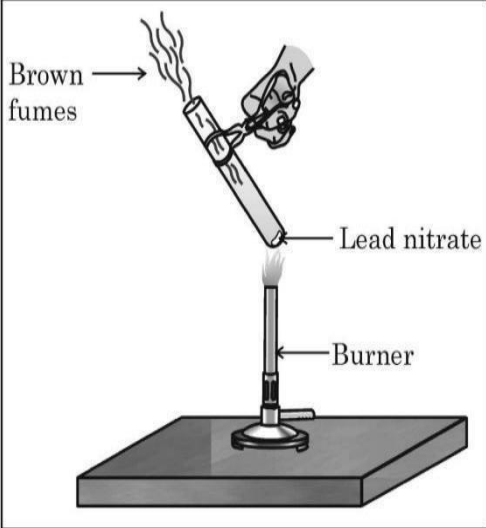
Section – A		Marks
1	Choose the function of the pancreatic juice from the following A. trypsin digests proteins and lipase carbohydrates B. trypsin digests emulsified fats and lipase proteins C. trypsin and lipase digest fats D. trypsin digests proteins and lipase emulsified fats	1
2	Which is the correct sequence of air passage during inhalation? A. Nostrils →larynx →pharynx →trachea →lungs B. Nasal passage →trachea →pharynx →larynx →alveoli C. larynx →nostrils →pharynx →lungs D Nostrils →pharynx →larynx →trachea →alveoli	1
3	Which of the following is a correct combination of function and part of the brain? A.Posture and balance: Cerebrum B.Salivation: Medulla in midbrain C.Hunger: Pons in hindbrain D.Blood pressure: Medulla in hindbrain	1
4	In the following food chain, plants provide 300 J of energy to rats. How much energy will be available to hawks from snakes? Plants → Rats → Snakes → Hawks A.300J B.30J C.3J D.0.3J	1

5	The brown eyed father and black eyed mother has all brown eyed children. What could be genetic make up of both the parents? (Take B for brown and b for black trait). I.Bb * Bb II.BB * Bb III.BB * bb IV.Bb * bb Choose the correct option: A.I and II B.II and IV C.II and III D.III and IV	1
---	---	---

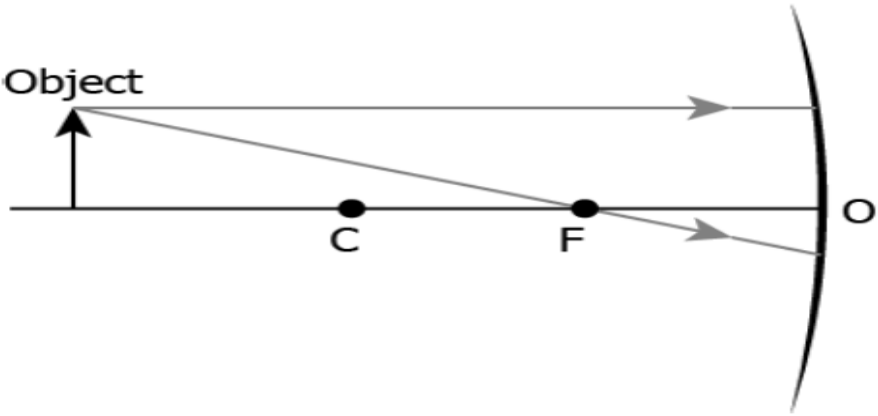
6	Which of the following limits the number of trophic levels in a food chain? A. Decrease in energy at higher trophic levels B. Sufficient food supply C. Polluted air D. Water	1
7	Which of the following features relates to biodegradable substances? a) Broken down by biological processes b) Remain inert c) Persist in environment for long time d) May harm the ecosystem	1
The following two questions consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: A.Both A and R are true, and R is the correct explanation of A. B.Both A and R are true, and R is not the correct explanation of A. C.A is true but R is false. D.A is false but R is true.		
8	Assertion (A): A geneticist crossed two pea plants and got 50% tall and 50% dwarf in the progeny. Reason (R): One plant was heterozygous tall and the other was dwarf.	1

9	Assertion (A): The concentration of harmful chemicals is least in human beings. Reason (R): Man is at the apex of the food chain.	1
10	State the events occurring during the process of photosynthesis. Is it essential that these steps take place one after the other immediately? OR Green plants capture light energy and use this light energy to convert water, carbon dioxide, and minerals into oxygen and energy-rich organic compounds like glucose. List the steps involved in the synthesis of glucose by the plants	2
11	Leaves of a healthy potted plant were coated with vaseline. Will this plant remain healthy for long? Give reasons for your answer.	2
12	(i) The first trophic level in a food chain is always a green plant. Why? (ii) Which of the following are always at the third trophic level of the food chains? (a) Carnivores. (b) Autotrophs. (c) Herbivores. (iii) What will be the amount of energy available to the organism of the third trophic level of a food chain, if the energy available at the first trophic level is 5000 joules.	2
13	Name the hormone required for the following. Also mention the name of endocrine gland from which that hormone is secreted: (a) Lowering of blood glucose. (b) Development of moustache and beard in human males. (c) Metabolism of carbohydrates, fats and proteins.	3
14	In a genetic experiment, plants with pure round green seeds (RRyy) were crossed with plants with wrinkled yellow seeds (rrYY). (a) Show the gametes formed when F₁ was self-pollinated. (b) A total of 288 seeds were produced which developed into saplings. Show the ratio in which these traits are independently inherited in these 288 saplings.	3
15	Human digestive system is a tube running from mouth to anus. Its main function is to breakdown complex molecules present in the food which cannot be absorbed as such into smaller molecules. These molecules are absorbed across the walls of the tube and the absorbed food reaches each and every cell of the body where it is utilised for obtaining energy. (a) Name the glands present in the buccal cavity and write the components of food on which the secretion of these glands act upon. (b) Two organs have a sphincter muscle at their exit. Name them. (c) What will happen if: (i) mucus is not secreted by the gastric glands. (ii) Villi are absent in the small intestine. OR (c) "Bile juice does not contain any enzyme, yet it has important roles in digestion." Justify the statement.	4

16	Study the given diagram and answer the following questions :  a) Identify A and B that are vital parts of human male reproductive system and write two functions of these parts. b) Suggest three contraceptive methods that can be practiced to control the size of human population which is essential for the health and prosperity of the country. State the basic principle involved in each. OR a) What are spores? Name the organism which multiplies with the help of these structures. b) Study the diagram given below and name the parts marked as A, B, C and D. What happens when B reaches D in the ovary? 	5
	SECTION -B	
17.	Meera performed the experiment given below using lead nitrate and observed the emission of brown fumes. This is due to	1

	 A. Oxidation of lead nitrate to produce lead oxide and oxygen B. Displacement of lead C. Decomposition of lead nitrate to produce nitrogen dioxide D. Double displacement reaction .	
18.	Which of the following substances is a base? a) Sodium chloride (NaCl) b) Potassium hydroxide (KOH) c) Carbon dioxide (CO₂) d) Water (H₂O)	1
19.	Which of the following salts does not have water of crystallization? a) Blue vitriol b) Baking soda c) Washing soda d) Gypsum	1
20.	The difference of water molecules in gypsum and Plaster of Paris is a) 5/2 b) 2 c) 1/2 d) 3/2	1
21.	Which of the following substances when dissolved in equal volume of water, will have the highest pH value? A. Sulphuric acid B. Acetic acid C. Magnesium hydroxide D. Sodium hydroxide	1
22.	Which of the following statements about the given reaction are correct? $3\text{Fe(s)} + 4\text{H}_2\text{O(g)} \rightarrow \text{Fe}_3\text{O}_4\text{(s)} + 4\text{H}_2\text{(g)}$ (i) Iron metal is getting oxidised (ii) Water is getting reduced (iii) Water is acting as a reducing agent (iv) Water is acting as an oxidising agent (a) (i), (ii) and (iii) (b) (iii) and (iv) (c) (i), (ii) and (iv) (d) (ii) and (iv)	1

23.	Solid calcium oxide reacts vigorously with water to form calcium hydroxide accompanied by the liberation of heat. This process is called slaking of lime. Calcium hydroxide dissolves in water to form its solution called lime water. Which among the following is (are) true about slaking of lime and the solution formed? (i) It is an endothermic reaction (ii) It is an exothermic reaction (iii) The pH of the resulting solution will be more than seven (iv) The pH of the resulting solution will be less than seven (a) (i) and (ii) (b) (ii) and (iii) (c) (i) and (iv) (d) (iii) and (iv)	1
	The following question consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: A.Both A and R are true, and R is the correct explanation of A. B.Both A and R are true, and R is not the correct explanation of A. C.A is true but R is false. D.A is false but R is true.	
24..	Assertion (A): Alkanes give addition reaction. Reason (R): Addition reactions are a characteristic property of unsaturated hydrocarbons.	1
25.	What are the constituents of solder alloy? Which property of solder make it suitable for welding electrical wires.	2
26.	A metal A, which is used in the thermite process, when heated with oxygen, gives an oxide B, which is amphoteric in nature. Identify A and B. Write down the reactions of oxide B with HCl and NaOH.	3
27.	A metal that exists as a liquid at room temperature is obtained by heating its sulphide in the presence of air. Identify the metal and its ore and give the reaction involved.	3
28.	Case based / data based questions with 2 to 3 short sub-parts. Internal choice is provided in one of these sub-parts. Salts play a very important role in our daily life. Sodium chloride which is known as common salt is used almost in every kitchen. Baking soda is also a salt used in faster cooking as well as in baking industry. The family of salts is classified on the basis of cations and anions present in them. (a) Identify the acid and base from which Sodium chloride is formed. (b) Find the cation and the anion present in Calcium sulphate.	4

	(c) "Sodium chloride and washing soda both belong to the same family of salts." Justify this statement. OR (c) Define the term pH scale. Name the salt obtained by the reaction of Potassium hydroxide and Sulphuric acid and give the pH value of its aqueous solution	
29.	An organic compound A of molecular formula $C_2H_4O_2$ is widely used as preservative in pickles. This compound reacts with ethanol to form a sweet - smelling compound B. (a) Identify compound A and B. (b) Write the chemical equation for the reaction involved. (c) Write two uses of compound B. (d) What happens when compound A reacts with baking soda? Write chemical equation for the reaction. (e) What happens when compound A is treated with sodium hydroxide? Write chemical equation for the reaction. OR (a) What are micelles? (b) With the help of suitable diagram show the formation of micelles, when soap is applied to dirt. (c) Explain the mechanism of cleansing action of soap . (d) What is saponification reaction? Write the equation involved.	5
	SECTION C	
30.	Most of the refraction for the light rays entering the eye occurs at: (a) Iris (b) Pupil (c) Crystalline lens (d) Outer surface of Cornea	1
31.	The image shows the path of incident rays to a concave mirror. 	1

	Where would the reflected rays meet for the image formation to take place? (a) Behind the mirror (b) Between F and O (c) Between C and F (d) Beyond C	
32.	The following question consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: A.Both A and R are true, and R is the correct explanation of A. B.Both A and R are true, and R is not the correct explanation of A. C.A is true but R is false. D.A is false but R is true. Assertion (A): The mirrors used in search light are concave spherical. Reason (R): In concave spherical mirror the image formed is always virtual.	1
33	A ray of light is incident on a rectangular glass slab immersed in a medium. After refraction through the slab, the emergent ray comes out parallel to the incident ray. Explain with the help of a diagram.	2
34.	What are the two advantages of connecting electric devices in parallel with the battery instead of in series? OR An electric iron of resistance 20 Ohm takes a current of 5 A. Calculate the heat developed in 30s in KJ.	2
35.	If an electric heater rated 800 W operates 6h/day. Find the Cost of energy to operate it for 30 days at ₹3.00 per unit of consumption.	3
36.	A person cannot see objects beyond 80 cm while a person with normal eyesight can see object easily placed up-to 160 cm. Identify the defect he is suffering from. Also Find the nature, the focal length and the power of the correcting lens	3
37	(i) Draw magnetic field lines around a solenoid. (ii) List any two properties of magnetic field lines. (OR) How will magnetic field produced at a point due to a current carrying circular coil changes (i)If we increase the current flowing through the coil. (ii) Reverse direction of current through the coil (iii)Increase the number of turns in the coil.	3
38.	Read the following passage and answer the questions : A student took three convex lenses of different focal lengths and performed the experiment to see the image formation by placing an object at different distances with these lenses as shown in the following table.	4

Case no.	Object distance	Focal Length
1	35 cm	15 cm
2	10 cm	20 cm
3	30 cm	15 cm

- (a) List two properties of the image formed in Case 1.
 (b) In which case size of image equals size of object. Give reason.
 (c) In which one of the cases given in the table, the mirror will form virtual image and why?

OR

- (c) Identify the case in the above table which resembles the situation in which concave mirrors are used as shaving mirrors? Give reason to support your answer.

39.

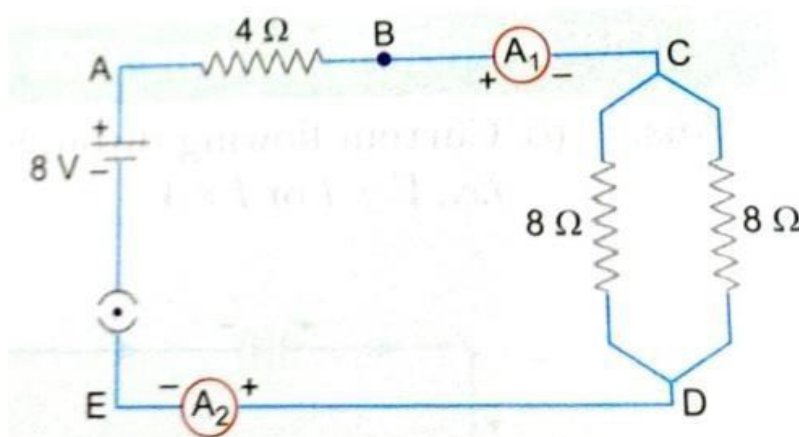
An electric lamp of resistance $2\ \Omega$ and a conductor of resistance $4\ \Omega$ are connected to a 6 V battery in series. Calculate:

- (i) The total resistance of the circuit,
 (ii) The current through the circuit,
 (iii) The potential difference across the conductor
 (iv) Power of the lamp.
 (v) Power of conductor

OR

Find out the following in the electric circuit given in figure alongside:

- (i) Effective resistance of two $8\ \Omega$ resistors in the combination
 (ii) Current flowing through $4\ \Omega$ resistor
 (iii) Potential difference across $4\ \Omega$ resistance
 (iv) Power dissipated in $4\ \Omega$ resistor
 (v) Difference in ammeter readings, if any



5

केन्द्रीय विद्यालय संगठनम् राँची, संभागः

द्वितीय प्राक् बोर्ड परीक्षा (2025-26)

कक्षा :- दशमी (X)

विषयः - संस्कृतम् (122)

मूल्याङ्कनपत्रम्

‘क’ खण्डः अपठितावबोधनम् (10 अङ्काः)

- 1 क) एकपदेन उत्तरत - (केवलं प्रश्नद्वयम्) 1x2=2
(i) पवित्रप्रदेशः (ii) स्वच्छता (iii) अभियानम्
ख) पूर्णवाक्येन उत्तरत - (केवलं प्रश्नद्वयम्) 2x2=4
(i) छात्राः विद्यालये समयं शिक्षणार्थं क्रीडितुं च यापयन्ति ।
(ii) भारत-सर्वकारेण अभियानमिदं प्रोत्साहकैः सह अग्रे नीयमानम् अस्ति ।
(iii) छात्राः अन्येषां कृते आदर्शाः भवेयुः ।
ग) उपयुक्त शीर्षकाय अङ्काः देयाः - 1x1=1
घ) यथानिर्देशम् उत्तरत - (केवलं प्रश्नत्रयम्) 1x3=3
(i) (घ) ददाति (ii) (ग) महत्त्वपूर्णम् (iii) (क) सरलतया (iv) (ग) छात्राः

“ख” खण्डः रचनात्मकम् कार्यम् (15 अङ्काः)

- 2 पत्र लेखनम्- ½ x10=5
(i) भाग्यनगरतः (ii) ललिते ! (iii) कुशलिनी (iv) कथयितुम् (v) चन्द्रयानस्य (vi) उपरि
(vii) प्रधानमन्त्री (viii) भारतीयाः (ix) मातापित्रोः (x) मालती
3. शुद्ध चित्रानुसारं वाक्याय अङ्काः देयाः परीक्षकस्य विवेकानुसारेण
(केवलं वाक्यपञ्चकम्) 1x5=5
अथवा
शुद्ध अनुच्छेद वाक्यनिर्माणाय अङ्काः देयाः परीक्षकस्य विवेकानुसारेण
(केवलं वाक्यपञ्चकम्) 1x5=5
4. शुद्ध वाक्यनिर्माणाय अङ्काः देयाः परीक्षकस्य विवेकानुसारेण 1x5=5

ग’ खण्डः अनुप्रयुक्तव्याकरणम् (25 अङ्काः)

5. अधोलिखित वाक्येषु रेखांकित पदेषु सन्धिम् सन्धिविच्छेदम् वा कुरुत-
(केवलं प्रश्नचतुष्टयम्) 1x4=4
(i) कश्चित् (ii) द्वयोः+अपि (iii) स्यान्न (iv) रिक्तः+असि (v) तदेवाहुः
6. अधोलिखितवाक्येषु रेखाङ्कितपदानां समासं विग्रहं वा प्रदत्तविकल्पेभ्यः चित्वा लिखत-
(केवलं प्रश्नचतुष्टयम्) 1x4=4
(i) (ख) उपरामम् | (ii) (ख) कुशः च लवः च (iii) (क) जलस्य उपप्लव
(iv) (घ) स्थितप्रज्ञः (v) (ग) ससम्मानम् |

7 अधोलिखितवाक्येषु रेखाङ्कितपदानां प्रकृति-प्रत्ययौ संयोज्य विभज्य वा उचितम् उत्तरं विकल्पेभ्यः चित्वा लिखत - (केवलं प्रश्नचतुष्टयम्) $1 \times 4 = 4$

- (i) (क) सभ्य + तल् (ii) (घ) देव + डीप् (iii) (ग) विचित्रा (iv) (क) महत् + त्व
(v) (ग) बुद्धिमती

8 . वाच्यानुसारं उचितपदैः रिक्तस्थानानि पूरयित्वा अधोलिखितं संवादं पुनः लिखत- (केवलं प्रश्नत्रयम्) $1 \times 3 = 3$

- (i) (ग) त्वम् (ii) (ख) पठामि (iii) (ग) पठ्यते (iv) (ख) पुस्तकानि

9. कालबोधकशब्दैः अधोलिखित-दिनचर्या पूरयत - (केवलं प्रश्नचतुष्टयम्) $1 \times 4 = 4$

- (i) पञ्चवादने (ii) सार्धं पञ्चवादने (iii) सपाद षड्वादने (iv) पादोन अष्टवादने
(v) सपाद चतुर्वादने

10 मञ्जूषायां प्रदत्तैः उचितैः अव्ययपदैः अधोलिखितवाक्येषु रिक्तस्थानानि पूरयत (केवलं प्रश्नत्रयम्) $1 \times 3 = 3$

- (i) अत्र (ii) एव (iii) कुतः (iv) च

11 अधोलिखितवाक्येषु रेखाङ्कित-अशुद्धपदाय उचितं पदं चित्वा वाक्यानि पुनः लिखत- (केवलं प्रश्नत्रयम्) $1 \times 3 = 3$

- (i) (ख) संधावति (ii) (ग) एका (iii) (ग) तनूजस्य (iv) (घ) पीडयति

‘घ’ खण्डः पठितावबोधनम् (30 अङ्काः)

12.

I एकपदेन उत्तरत - (केवलं प्रश्नद्वयम्) $\frac{1}{2} \times 2 = 1$

- (i) बलीवर्दाभ्याम् (ii) दुर्बलः (iii) वृषः

II पूर्णवाक्येन उत्तरत - (केवलं प्रश्नद्वयम्) $1 \times 2 = 2$

- (i) भूमौ पतितं स्वपुत्रं दृष्ट्वा सर्वधनूनां मातुः सुरभेः नेत्राभ्याम् अश्रूणि आविरासन्
(ii) सुरभेरिमाम् अवस्थां दृष्ट्वा सुराधिपः अयि शुभे ! कथमेवं रोदिषि ? उच्यताम्” इति अपृच्छत्
(iii) सः ऋषभः हलमूढ्वा गन्तुमशक्तः क्षेत्रे पपात

III भाषिककार्ये प्रदत्तविकल्पेभ्यः उचितम् उत्तरं चित्वा लिखत। (केवलं प्रश्नद्वयम्) $1 \times 2 = 2$

- (क) दुर्बलम् (ख) क्रुद्धः (ग) सुराधिपः

13

क एकपदेन उत्तरत - (केवलं प्रश्नद्वयम्) $\frac{1}{2} \times 2 = 1$

- (क) आलस्यम् (ख) गुणम् (ग) मूषकः

ख पूर्णवाक्येन उत्तरत - (केवलं प्रश्नद्वयम्) $1 \times 2 = 2$

- क- उद्यमेन समः बन्धुः नास्ति
ख- वसन्तस्य गुणं पिकः जानाति
ग- बली बलं वेत्ति

(ग) निर्देशानुसारम् उत्तरत - (केवलं प्रश्नद्वयम्) $1 \times 2 = 2$

- (क) निर्गुणः (ख) महान् (ग) बन्धुः

14.

क एकपदेन उत्तरत - (केवलं प्रश्नद्वयम्) $\frac{1}{2} \times 2 = 1$

- (क) काकः (ख) आदर्शच्छात्रः (ग) गजः

ख पूर्णवाक्येनउत्तरत- (केवलं प्रश्नद्वयम्)

1x2=2

क- काकानां ऐक्यं विश्वप्रथितं वर्तते

ख- वसन्तसमये पिककाकयोः भेदः भवति

ग- पिकस्य सन्तानं काकः पालयति

ग निर्देशानुसारम् उत्तरत – (केवलं प्रश्नद्वयम्)

1x2= 2

(क) अहम् (ख) काकाय (ग) अनृतम्

15

1x4=4

(क) केषु (ख) कः (ग) कौ (घ) केन (ङ) कया

16

1x4=4

(i) श्रेयः (ii) सुखानि (iii) कर्म (iv) कुर्यात्

अथवा

1x4=4

(i) चातक (ii) गगने (iii) वृष्टिभिः (iv) गर्जन्ति

17 .

½x8=4

1 - (ख) कश्चन निर्धनः कष्टेन वित्तम् उपार्जितवान् ।

2 - (ज) एकदा तस्य पुत्रः रुग्णः जातः ।

3 - (ङ) सः पुत्रं द्रष्टुं पदातिरेव प्राचलत् ।

4 - (क) चौरस्य पदध्वनिना अतिथिः प्रबुद्धः ।

5 - (छ) चौरः एव उच्चैः क्रोशितुम् आरभत ।

6 - (घ)न्यायाधीशः शवं न्यायालये आनेतुम् आदिशत् ।

7 - (च)सः शवः प्रावारकम् अपसार्य न्यायाधीशं सत्यं निवेदितवान् ।

8 - (ग) न्यायाधीशः आरक्षिणे कारादण्डम् आदिश्य, तं जनं ससम्मानं मुक्तवान्।

18.

1x3=3

(i) (ग) गर्दभः (ii) (ग) मुखे (iii) (घ) कथिता (iv) (ख)काकः

KENDRIYA VIDYALAYA SANGATHAN, RANCHI REGION
SECOND PRE-BOARD EXAM (2025-26)
CLASS-X
SUBJECT-MATHEMATICS (BASIC-241)

Time Allowed: 3 Hours

Maximum Marks: 80

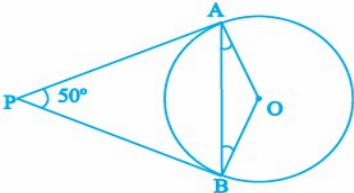
General Instructions:

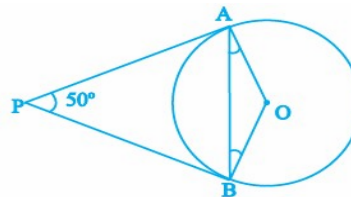
1. This Question Paper has 5 Sections A, B, C, D, and E.
2. Section A has 20 Multiple Choice Questions (MCQs) carrying 1 mark each.
3. Section B has 5 Short Answer-I (SA-I) type questions carrying 2 marks each.
4. Section C has 6 Short Answer-II (SA-II) type questions carrying 3 marks each.
5. Section D has 4 Long Answer (LA) type questions carrying 5 marks each.
6. Section E has 3 Case Based integrated units of assessment (4 marks each) with sub-parts of the values of 1, 1 and 2 marks each respectively.
7. All Questions are compulsory. However, an internal choice in 2 Qs of 2 marks, 2 Qs of 3 marks and 2 Questions of 5 marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.
8. Draw neat figures wherever required. Take $\pi = 22/7$ wherever required if not stated.

Section A

Section A consists of 20 questions of 1 mark each.

Q. No	Questions	Marks
1	If p and q are two co-prime numbers, then HCF of p and q is (a) 1, (b) pq (c) 0 (d) 2p	1
2	If product of two numbers is 369 and their LCM is 369, then their HCF = ____ (a) 2 (b) 7 (c) 1 (d) 369	1
3	If one zero of the quadratic polynomial $x^2 + 4x - k$ is 3, then the value of k is (a) 10 (b) 21 (c) 5 (d) -5	1
4	The pair of linear equations $3x+3y = 5$ and $4x+6y = 10$ has (a) unique solution (b) infinite solution (c) No solution (d) None of these	1
5	A circle can have ____ parallel tangents at a single time. (a) One (b) Two (c) Three (d) Four	1

6	The perimeter of a triangle with vertices (0, 4), (0, 0) and (3, 0) is (a) 5 units (b) 12 units (c) 11 units (d) $(7 + \sqrt{5})$ units	1												
7	If in triangles ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FD}$, then they will be similar, when (a) $\angle B = \angle E$ (b) $\angle A = \angle D$ (c) $\angle B = \angle D$ (d) $\angle A = \angle F$	1												
8	Find the 5 th term of the given A. P. 2,5,8,..... (a) 14 (b) 51 (c) 16 (d) 12	1												
9	In the figure, if PA and PB are tangents to the circle with centre O such that $\angle APB = 50^\circ$, then $\angle OAB$ is equal to (a) 25° (b) 30° (c) 40° (d) 50° 	1												
10	. If $\sin A = 1/2$, then the value of $\cos A$ is : (a) $\sqrt{3}/2$ (b) $1/\sqrt{3}$ (c) $\sqrt{3}$ (d) 1	1												
11	$\sqrt{4 \cos^2 A + 4 \sin^2 A}$ is equal to (a) 1 (b) $\frac{1}{\sqrt{3}}$ (c) 2 (d) 0	1												
12	The value of $\sqrt{(1+\sin A)(1-\sin A)}$ is (a) $\sec A$ (b) $\sin A$ (c) $\operatorname{cosec} A$ (d) $\cos A$	1												
13	If a cone is cut parallel to the base of it by a plane in two parts, then the shape of the top of the cone will be a: (a) Sphere (b) Cube (c) Cone itself (d)Cylinder	1												
14	If the radii of two circles are in the ratio of 2 : 3, then their areas are in the ratio of : (a) 4 : 6 (b) 8 : 3 (c) 4 : 9 (d) 9 : 16	1												
15	The total surface area of a solid hemisphere of radius 7 cm is : (a) $447\pi \text{ cm}^2$ (b) $239\pi \text{ cm}^2$ (c) $174\pi \text{ cm}^2$ (d) $147\pi \text{ cm}^2$	1												
16	For the following distribution: <table border="1" data-bbox="206 1451 1143 1564"><tr><td>Class</td><td>0 - 5</td><td>5 - 10</td><td>10 - 15</td><td>15 - 20</td><td>20 - 25</td></tr><tr><td>Frequency</td><td>10</td><td>15</td><td>12</td><td>20</td><td>9</td></tr></table> the lower limit of the modal class is (a) 10 (b) 15 (c) 20 (d) 25	Class	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	Frequency	10	15	12	20	9	1
Class	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25									
Frequency	10	15	12	20	9									
17	If the mean of the following distribution is 2.6, then the value of y is Variable (x) 1 2 3 4 5	1												



	Frequency 4 5 y 1 2 (a) 3 (b) 8 (c) 13 (d) 24	
18	A card is selected at random from a well shuffled deck of 52 cards. The probability of its being a face card is (a) $\frac{3}{26}$ (b) $\frac{3}{13}$ (c) $\frac{2}{13}$ (d) $\frac{1}{2}$	1
19	Direction for questions 19 & 20: In question numbers 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option. Assertion: If HCF of 510 and 92 is 2, then the LCM of 510 & 92 is 32460 Reason: as $\text{HCF}(a,b) \times \text{LCM}(a,b) = a \times b$ (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.	1
20	Assertion (A): The distance of the point (2, 11) from the x -axis is 11 units. Reason (R): The distance of the point (x, y) from the x -axis is it's ordinate, i.e., y-units. (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A). (b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A). (c) Assertion (A) is true but Reason (R) is false. (d) Assertion (A) is false but Reason (R) is true.	1

Section B

Section B consists of 5 questions of 2 marks each.

21	For what values of k will the following pair of lines $5x + 7y = 3$ and $15x + 21y = k$ will be coincided ?	2
22	In the figure, altitudes AD and CE of $\triangle ABC$ intersect each other at the point P. Show that: (i) $\triangle ABD \sim \triangle CBE$ (ii) $\triangle PDC \sim \triangle BEC$ [OR] In the figure, $DE \parallel AC$ and $DF \parallel AE$. Prove that $\frac{BF}{FE} = \frac{BE}{EC}$	2
23	Prove that the tangents drawn at the ends of a diameter of a circle are parallel.	2
24	Given $15 \cot A = 8$, find $\sin A$ and $\sec A$.	2
25	Find the perimeter of a quadrant of a circle of radius 7 cm. [OR] Find the diameter of a circle whose area is equal to the sum of the areas of the two circles of radii 24 cm and 7 cm.	2

Section C

Section C consists of 6 questions of 3 marks each.

26	Prove that $\sqrt{5}$ is an irrational number.	3
27	Find the zeroes of the quadratic polynomial $3x^2 - x - 4$ and verify the relationship between the zeroes and the coefficients.	3
28	A shopkeeper gives books on rent for reading. She takes a fixed charge for the first two days, and an additional charge for each day thereafter. Latika paid Rs 22 for a book kept for six days, while Anand paid Rs 16 for the book kept for four days. Find the fixed charges and the charge for each extra day. [OR] A fraction becomes $\frac{9}{11}$ if 2 is added to both the numerator and the denominator. If 3 is added to both the numerator and the denominator, it becomes $\frac{5}{6}$. Find the fraction.	3

29	Prove that the length of the tangents drawn from an external point to a circle are equal.	3
30	If $\sin(A-B) = 1/2$, and $\cos(A+B) = 1/2$, Find A and B. $0^\circ < A + B \leq 90^\circ, A > B$, [OR] If $\sin \theta + \cos \theta = \sqrt{3}$, then prove that $\tan \theta + \cot \theta = 1$	3
31	A coin is tossed two times. Find the probability of getting (i) at most one head (ii) no head.	3

Section D

Section D consists of 4 questions of 5 marks each.

32	A train covers a distance of 90 km at a uniform speed. Had the speed been 15 km/hr more, it would have taken 30 minutes less for the journey. Find the original speed of the train. [OR] The sum of a two-digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number. How many such numbers are there?	5
33	State and Prove Basic proportionality Theorem (BPT)	5
34	A tent is in the shape of a right circular cylinder surmounted by a cone. The total height and the diameter of the base are 13.5m and 28m, respectively. If the height of the cylindrical portion is 3m, find the total surface area of the tent. [OR] A toy is in the shape of a right circular cone surmounted by a hemisphere. The radius of the hemisphere and cone is 5 cm. Find the surface area of the toy if the total height of the toy is 17 cm..	5
35	The following table shows the ages of the patients admitted in a hospital during a year.	5

Age (in years)	No. of patients
5 – 15	6
15 – 25	11
25 – 35	21
35 – 45	23
45 – 55	14
55 – 65	5

Find the mode and the mean of the data given above

Section E

Case study-based questions are compulsory.

36 Case Study – 1

4

In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line.



A competitor starts from the bucket, picks up the nearest potato, runs back with it, drops it in the bucket, runs back to pick up the next potato, runs to the bucket to drop it in, and she continues in the same way until all the potatoes are in the bucket.

Based on the above information answer the following questions.

(I) Find the Series and check whether it is in AP?

1

(II) How much distance a competitor has to run to collect 3 potatoes?

1

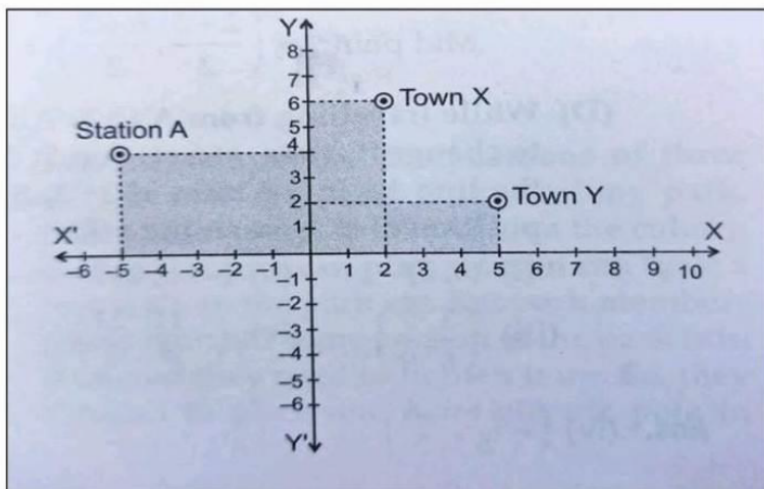
(III) What is the total distance the competitor has to run?

2

[OR]

In the series what will be the sum of 4th term and 8th term?

Two friends Dalvin and Alice work in the same office in Toronto. In the Christmas vacation, they both decided to go to their home towns represented by Town X and Town Y. Town X and Town Y are connected by trains from the same station A in Toronto. The situation of Town X, Town Y and station A is shown on the coordinate axis.



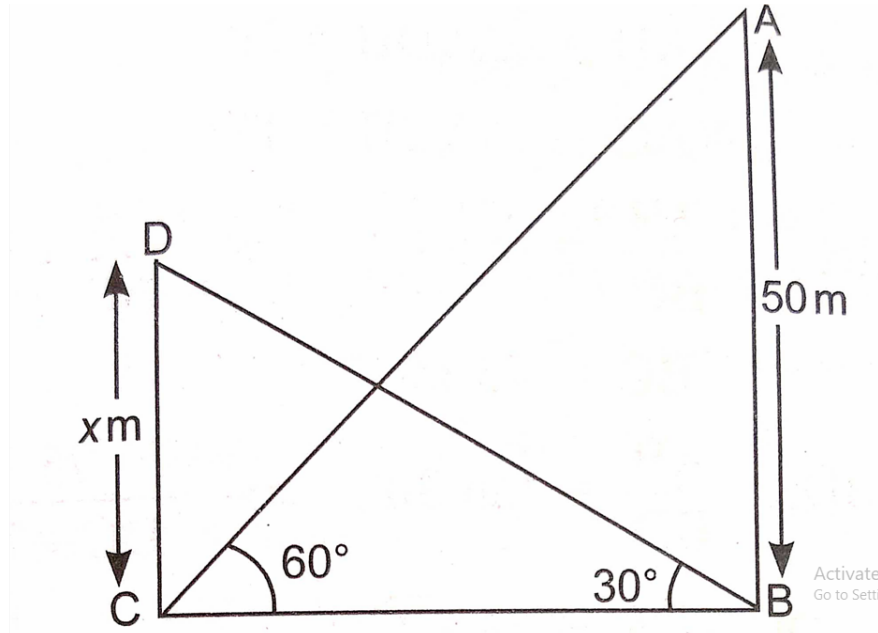
Based on the above information answer the following questions using the coordinate geometry.

- (I) What is the distance that Dalvin has to travel to reach his hometown X?
1
- (II) What is the distance that Alice has to travel to reach her hometown Y?
1
- (III) While travelling from A to Y, Alice had to change the train, at a station, it divides the line AY in the ratio of 2:3, find the coordinates of position of that station. 2

[OR]

In what ratio, Y - axis divides the line segment joining A and Y? Also find the coordinates of point of intersection.

The angle of elevation of the top of a building from the foot of a tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . The height of the tower is 50 m. Observe the given figure and give the answer of the following:



- (i) What is the distance between building CD and tower AB? 1
- (ii) What is the distance between root of building CD and the top of the tower AB? 1
- (iii) Find the height of building CD? 2

OR

Find the distance between root of tower AB and the top of the building CD?

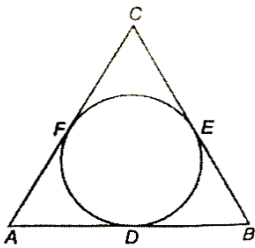
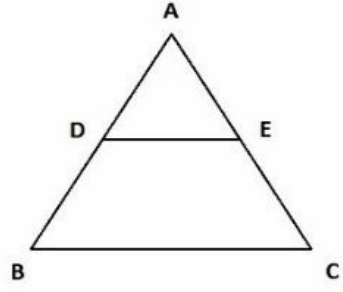
END OF QUESTIONS

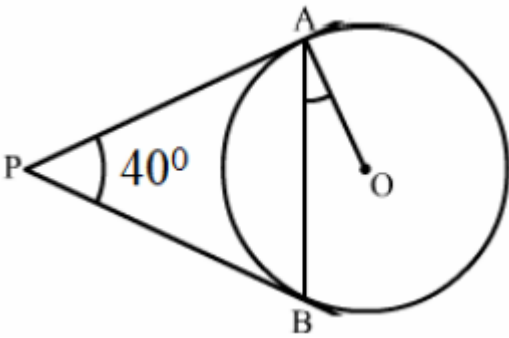
CLASS- X MATHEMATICS STANDARD – Code No.041**Time: 3 hours**

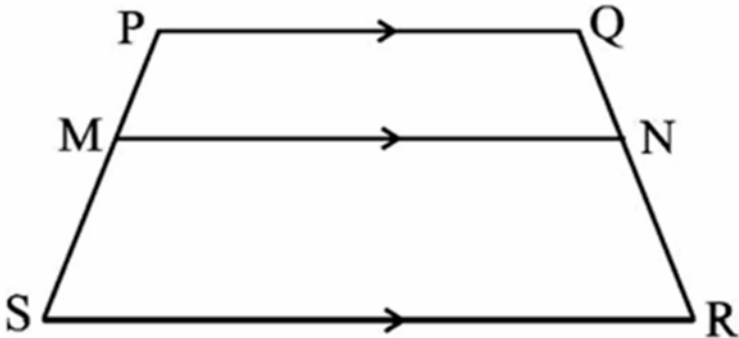
Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take $\pi =$ wherever required if not stated.
10. Use of calculators is not allowed.

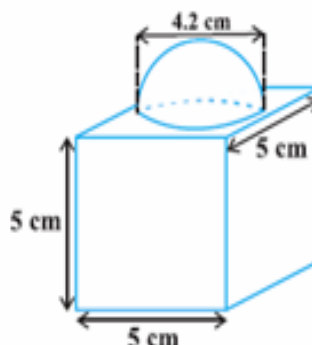
(Section A) Section A consists of 20 questions of 1 mark each.		
Q. No.	Questions	Marks
1.	If the HCF (2520, 6600) = 40 and LCM (2520, 6600) = $252 \times k$, then the value of k is: (A) 1650 (B) 1600 (C) 165 (D) 1625	1
2.	The point P on x-axis is equidistant from the points A(-1, 0) and B(5, 0) is: (A) (2, 0) (B) (0, 2) (C) (3, 0) (D) (2, 2)	1
3.	The pair of equations given by $y + 2x = 8$ and $2x + 4y - 16 = 0$ represents two lines which are: (A) parallel (B) coincident. (C) intersecting at exactly one point (D) intersecting at exactly two points	1

4.	In fig. if $AB=12\text{cm}$, $BC=8\text{cm}$ and $AC = 10\text{cm}$, then What will be the value of AD, where AB, BC and CA are Tangents to the circle  (A) 3cm (B) 4cm (C) 6cm (D) 7cm	1
5.	Given that $\sin\alpha = \frac{1}{2}$ and $\cos\beta = \frac{\sqrt{3}}{2}$, then the value of $(\alpha + \beta)$ is (A) 0° (B) 30° (C) 60° (D) 90°	1
6.	If -2 is a root of quadratic equation $x^2 - px - 10 = 0$ then (A) $p = 3$ (B) $p = 5$ (C) $p = 7$ (D) $p = 1$	1
7.	An arc of a circle is of length 5π cm and the sector it bounds has an area of 20π cm square . The radius of the circle is (A) 4 cm (B) 10 cm (C) 8 cm (D) 15 cm	1
8.	One card is drawn at random from a well shuffled deck of 52 playing cards. The probability that it is a red king is: (A) $\frac{2}{26}$ (B) $\frac{2}{13}$ (C) $\frac{1}{26}$ (D) $\frac{1}{52}$	1
9.	If $2 \sin 3x = \sqrt{3}$, then $x = ?$ (A) 45° (B) 20° (C) 30° (D) 15°	1
10.	The LCM of smallest two-digit composite number and smallest composite number is (A) 12 (B) 44 (C) 4 (D) 20	1
11.	2 cubes each of volume 64 cm^3 are joined end to end. What is the surface area of the resulting cuboid ? (A) 160 cm^2 (B) 150 cm^2 (C) 260 cm^2 (D) 200 cm^2	1
12.	If the zeroes of the quadratic polynomial $x^2 + (a + 1)x + b$ are 2 and -3, then (A) $a = -7, b = -1$ (B) $a = 5, b = -1$ (C) $a = 2, b = -6$ (D) $a = 0, b = -6$	1
13.	The area of a circle that can be inscribed in a square of side 6 cm is: (A) $36\pi \text{ cm}^2$ (B) $18\pi \text{ cm}^2$ (C) $12\pi \text{ cm}^2$ (D) $9\pi \text{ cm}^2$	1
14.	In $\triangle ABC$, $DE \parallel BC$ as shown in the figure. If $AD = 4\text{cm}$, $AB = 9 \text{ cm}$ and $AC = 13.5 \text{ cm}$, then the length of EC is:  (A) 6 cm (B) 7.5 cm (C) 4.5 cm (D) 3.5 cm	1
15.	A bag has 5 white marbles, 8 red marbles and 4 purple marbles. If we take a marble randomly, then what is the probability of not getting purple marble ?	

	(A) 0.5	(B) 0.66	(C) 0.08	(D) 0.77													
16.	The line segment joining the points A (5, 3) and B (-3, 11) is divided by the point C (3,5) in the ratio (A) 1:3 (B) 3:1 (C) 2:3 (D) 3:2				1												
17.	For the following distribution: <table border="1"><tr><td>Class</td><td>0-5</td><td>5-10</td><td>10-15</td><td>15-20</td><td>20-25</td></tr><tr><td>Frequency</td><td>10</td><td>15</td><td>12</td><td>20</td><td>9</td></tr></table> The sum of lower limits of the median class and modal class is (A) 15 (B) 25 (C) 30 (D) 35				Class	0-5	5-10	10-15	15-20	20-25	Frequency	10	15	12	20	9	1
Class	0-5	5-10	10-15	15-20	20-25												
Frequency	10	15	12	20	9												
18.	If PA and PB are tangents to the circle with centre O such that $\angle APB = 40^\circ$, then $\angle OAB$ is equal to  (A) 40° (B) 30° (C) 20° (D) 25°				1												
	DIRECTIONS: In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option: (A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A) (B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A) (C) Assertion (A) is true but reason (R) is false. (D) Assertion (A) is false but reason (R) is true.																
19.	Assertion (A): The HCF of two numbers is 18 and their product is 3072. Then their LCM = 169. Reason (R): If a, b are two positive integers, then $HCF \times LCM = a \times b$.			1													
20.	Assertion (A): The value of $\sin \theta$ always increases as θ increases from 0° to 90° Reason (R): The value of $\cos \theta$ always decreases as θ increases from 0° to 90°			1													
(Section – B)																	
Section B consists of 5 questions of 2 marks each.																	
21.	Determine k so that $4k + 8$, $2k^2 + 3k + 6$ and $3k^2 + 4k + 4$ are three consecutive terms of an AP. OR Determine the A.P. whose third term is 16 and 7th term exceeds the 5th term by			2													

	12.	
22.	In a ΔABC , right angled at B, if $\tan A = \frac{1}{\sqrt{3}}$ Find the value of : $\sin A \cos C + \cos A \sin C$	2
23.	PQRS is a trapezium with $PQ \parallel SR$. If M and N are two points on the non-parallel sides PS and QR respectively, such that MN is parallel to PQ, then show that $\frac{PM}{MS} = \frac{QN}{NR}$ 	
24.	A chord of a circle of radius 21 cm subtends an angle 60° at the centre. Find the area of the corresponding minor segment of the circle. [Use $\pi = 3.14$ and $\sqrt{3} = 1.73$]. OR A brooch is made with silver wire in the form of a circle with diameter 35 mm. The wire is also used in making 5 diameters which divide the circle into 10 equal sectors as shown in figure. Find. the area of each sector of the brooch. 	2
25.	Prove that the lengths of tangents drawn from an external point to a circle are equal.	2
(Section – C) Section C consists of 6 questions of 3 marks each.		
26.	Prove that the parallelogram circumscribing a circle is a rhombus.	3
27.	Prove that $\sqrt{2} + \sqrt{3}$ is an irrational number.	3
28.	If zeroes of the polynomial $x^2 + (a + 1)x + b$ are 2 and -3 , then find the value of $(a + b)$.	3
29.	Prove the following Identities :	3

	$= \tan A$ (OR) $\sec A (1 - \sin A) (\sec A + \tan A) = 1$	
30.	A box contains 90 paper discs which are numbered from 1 to 90. There is only one number on a disc. If one disc is drawn at random from the box find the probability that it bears (i). a two-digit number. (ii). a perfect square number. (ii). a number divisible by 5.	3
31.	Seven times a two-digit number is equal to four times the number obtained by reversing the order of the digits. If the difference of the digits is 3, determine the number.. OR Draw the graph of the equation $x - y + 1 = 0$ and $3x + 2y - 12 = 0$. Determine the coordinates of the vertices of the triangle formed by these lines and the x-axis and shade the triangular region.	3
(Section – D) Section D consists of 4 questions of 5 marks each		
32.	Ram and Shyam together have 55 marbles. Both of them lost 5 marbles each and the product of the number of marbles they have each 164. Find out how many marbles they had to start with ?	5
33.	Prove that If a line is drawn parallel to one side of a triangle to intersect other two sides in distinct points, the other two sides are divided in the same ratio.	5
34.	A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is a sphere of radius 0.5 cm, are dropped into the vessel, one-fourth of the water flows out. Find the number of lead shots dropped in the vessel OR The decorative block shown in the figure is made of two solids — a cube and a hemisphere. The base of the block is a cube with edge 5 cm, and the hemisphere fixed on the top has a diameter of 4.2 cm. Find the total surface area of the block. (Take $\pi = 3.14$)	5



35. Find the mean and median of the following data:						
Class	40-45	45-50	50-55	55-60	60-65	65-70
Frequency	8	9	10	9	5	4
OR						
If the median of the distribution table given below is 28.5, find the values of x and y.						
Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	x	20	15	y	5

5

Section – E

Section E consists of 3 case study-based questions of 4 marks each.

36. Amit wants to buy a car and plans to take loan from a bank for his car. He repays his total loan of ₹ 1,18,000 by paying every month starting with the first installment of ₹ 1000. If he increases the installment by ₹ 100 every month , answer the following:



Based on the above information answer the following questions:

- Find the amount paid by Amit in the 30th installment.
- What amount does Amit still have to pay after the 30th installment ?

1

2

2

OR

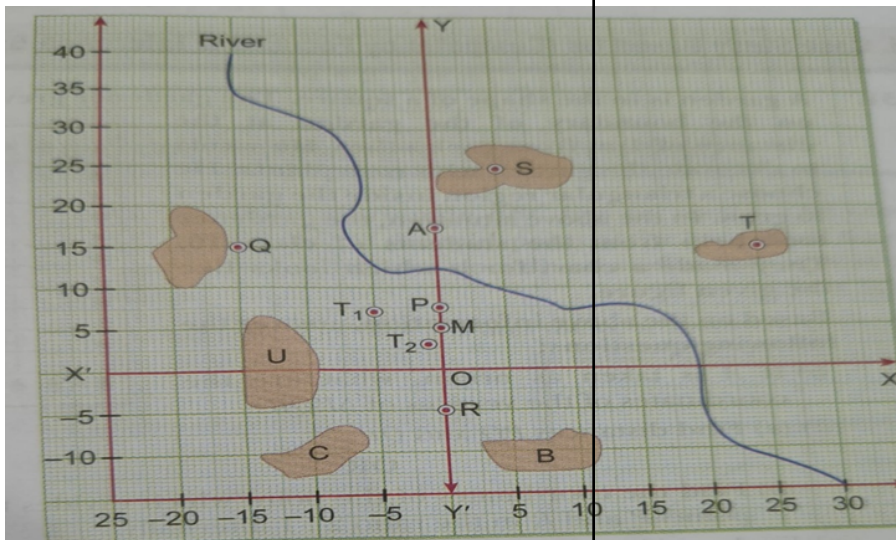
1

If the total number of installments is 40, What is the amount paid in the last installment ?

- (iii) Find the ratio of the 1st installment to the last installment.

37. National Park: A national park is an area set aside by the government to preserve and protect the natural environment.

The graph below shows a map of National Park. The shaded areas indicate woods. The plain area indicates meadows and fields without trees. Point O on the graph represents the location of the park's supervisor's office, And Point P and Q are the ranger's towers.



Based on the above information answer the following questions:

- (i) Find the distance between the Towers P (0,7.5) and Q (-15,15).
- (ii) Find the point on x- axis (other than 0) equidistant from the points R(0,-5) and M(0,5).

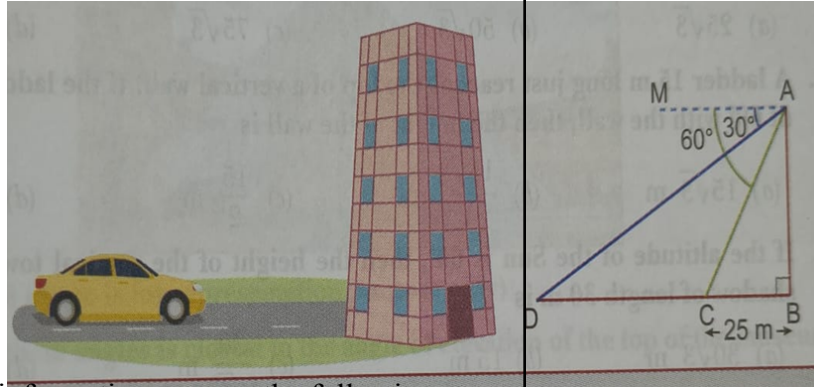
OR

There are two trees T1 (-5,7) and T2 (-1,3) in the park. Find the coordinates of the mid-point of the line segment joining both the trees.

- (iii) Find the distance of the point S (5,25) from x- axis.

38 Rohit is standing at the top of a building and observes a car at

the angle of depression of 30° as it approaches the base of the building at a uniform speed. 6 seconds later, the angle of depression increases to 60° , and at that moment, the car is 25 m away from the building.



Based on the above information, answer the following questions.

- (i) What is the height of the building ?
- (ii) What is the distance between two positions of the car ?
- (iii) What would be the total time taken by the car to reach the foot of the building from starting point ?

OR

What is the distance of the observer from the car when it makes an angle of 60° ?

----- END OF QUESTIONS -----