

KENDRIYA VIDYALAYA SANGATHAN, DELHI REGION

Pre-Board-II Examination-2024-25

Class-X

Subject- Maths Standard (041)

MM- 80

Time-3 Hrs

General Instructions

1. This question paper contains 38 questions. All questions are **compulsory**.
2. This Question paper has 5 sections **A, B, C, D** and **E**.
3. Section A has 20 MCQs of 1 mark each.
4. Section B has 5 questions carrying 02 marks each.
5. Section C has 6 questions carrying 03 marks each
6. Section D has 4 questions carrying 05 marks each.
7. Section E has 3 case based integrated questions carrying 04 marks each.
8. Draw neat diagrams wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.

SECTION-A

This section consists of 20 questions of 1 mark each

1. If the sum of zeroes of the polynomial $p(x)=2x^2-kx+1$ is 2, then the value of k is 1
(a) 4 (b) 2 (c) -2 (d) 5
2. If the probability of a player winning a game is 0.79, then the probability of his losing this game is :
(a) 1.79 (b) 0.31 (c) 0.21 (d) 0.41 1
3. The pair of linear equations $2x = 5y + 6$ and $15y = 6x - 18$ represents two lines which are 1
(a) intersecting (b) parallel (c) coincident (d) either intersecting or parallel
4. A card is drawn at random from a well shuffled pack of 52 cards. The probability that the drawn card is not an ace is : 1
(a) $\frac{1}{13}$ (b) $\frac{9}{13}$ (c) $\frac{4}{13}$ (d) $\frac{12}{13}$
5. The roots of the equation $x^2 + 3x - 10$ are : 1
(a) 2, -5 (b) -2, 5 (c) 2, 5 (d) -2, -5
6. If $x = a \sec \theta$ and $y = b \tan \theta$ then $x^2/a^2 - y^2/b^2$ is equal to : 1
(a) a^2 (b) b^2 (c) 1 (d) -1
7. The centre of a circle is at (2, 0). If one end of a diameter is (6, 0), then the other end is at :
(a) (0, 0) (b) (4, 0) (c) (-2, 0) (d) (-6, 0) 1

8. The middle most term of a data arranged in order is called :
 (a) mode (b) median (c) mean (d) deviation 1
9. If $\sin A = 2/3$, then the value of $\cot A$ is : 1
 (a) $\sqrt{5}/2$ (b) $3/2$ (c) $5/4$ (d) $2/3$
10. The value of p for which $(2p+1)$, 10 , and $(5p+5)$ are three consecutive terms of an AP is : 1
 (a) -1 (b) -2 (c) 1 (d) 2
11. If two positive integers p and q can be expressed as $p = 18a^2b^4$ and $q = 20a^3b^2$ where p and q are prime numbers then LCM (p, q) is : 1
 (a) $2a^2b^2$ (b) $180a^2b^2$ (c) $12a^2b^2$ (d) $180a^3b^4$
12. Let p be a prime number, then the quadratic equation having its roots as factors of p is : 1
 (a) $x^2 - px + p = 0$ (b) $x^2 - (p+1)x + p = 0$ (c) $x^2 + (p+1)x + p = 0$ (d) $x^2 - px + p + 1 = 0$
13. Maximum number of common tangents that can be drawn to two circles touches at a point is 1
 (a) 4 (b) 3 (c) 2 (d) 1
14. The number of revolutions made by a circular wheel of radius 0.25m in rolling a distance of 11 km are : 1
 (a) 2800 (b) 4000 (c) 5500 (d) 7000
15. A solid sphere is cut into two hemispheres. The ratio of the surface areas of sphere to that of two hemispheres taken together, is : 1
 (a) $1 : 1$ (b) $1 : 4$ (c) $2 : 3$ (d) $3 : 2$
16. The volume of the largest right circular cone that can be carved out from a solid cube of edge 2 cm is : 1
 (a) $4\pi/3\text{ cu cm.}$ (b) $5\pi/3\text{ cu cm.}$ (c) $8\pi/3\text{ cu cm.}$ (d). $2\pi/3\text{ cu cm}$

17. For the following marks distribution of 80 students:

Marks	below 10	below 20	below 30	below 40	below 50	below 60
Number of Students	3	12	27	57	75	80

The modal class is :

- (a). $10 - 20$. (b). $20 - 30$. (c). $30 - 40$. (d) $50 - 60$ 1
18. The points $(-4, 0)$ $(4, 0)$ and $(0, 3)$ are the vertices of a 1
 (a). Right triangle (b) Isosceles triangle
 (c). Equilateral triangle (d) scalene triangle

DIRECTION: In the question number 19 and 20 a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option

19. Assertion (A) : The tangents drawn at the end points of a diameter of a circle are parallel to parallel to the longest chord 1
 Reason: Diameter is the longest chord of a circle.
 (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation
 (b) Both assertion (A) and reason (R) are true and reason (R) is not the correct explanation

Assertion(A)

(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

20. Assertion (A) :If $\triangle ABC$ and $\triangle PQR$ are congruent triangles then they are also similar triangles 1
Reason (R): all congruent triangles are similar but the similar triangles need not to be congruent

(a) Both Assertion (A) and reason (R) are true and reason (R) is the correct explanation of A

(b) Both assertion (A) and reason (R) are true and 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.

SECTION B

This section consists of 5 questions of 2 marks each

21. Show that $5 \times 11 \times 17 + 3 \times 11$ is a composite number. 2

OR

On a morning walk three persons step out together and their steps measures 30 cm, 36 cm and 40 cm respectively what is the minimum distance should walk so that each can cover the same distance in complete steps

22. Point P and Q trisect the line segment joining the points A (- 2, 0) and B (0, 8) such that P is nearer to A. Find the coordinates of points P and Q. 2
23. Prove that: $(1 + \sec A)/\sec A = \sin^2 A/(1 - \cos A)$ 2
24. If a fair coin is tossed twice, Find the probability of getting atmost one head. 2

OR

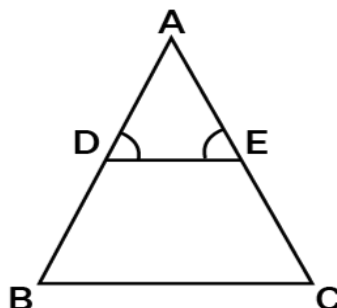
Cards numbered 7 to 40 were put in a box. Poonam selects a card at random. What is the probability that Poonam select a card which is a multiple of 7 ?

25. If two adjacent vertices of a parallelograms are (3, 2) and (-1, 0) and the diagonals intersect at (2, - 5), then find the coordinates of the other two vertices. 2

SECTION C

This section consists of 6 questions of 3 marks each.

26. Prove that $\sqrt{3}$ is an irrational number. 3
27. Find the quadratic polynomial whose zeros are reciprocal of the zeros of the polynomial $f(x) = ax^2 + bx + c$, $a \neq 0$, $c \neq 0$ 3
28. In figure $\angle D = \angle E$ and $AD/DB = AE/EC$, prove that $\triangle BAC$ is an isosceles triangle. 3



(For Visually Impaired Only)

State and Prove Basic Proportionality Theorem

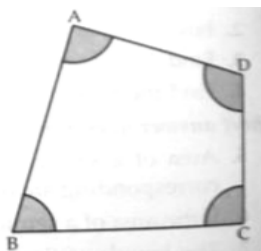
OR

ABCD is a trapezium in which $AB \parallel DC$ and its diagonals intersect each other at the Point O, show that $AO/BO = CO/DO$

29. Prove that $\left(\frac{1}{\cos \theta} - \cos \theta\right) \left(\frac{1}{\sin \theta} - \sin \theta\right) = \frac{1}{\tan \theta + \cot \theta}$ 3
30. The perimeter of a certain sector of a circle of radius 5.6 m is 20 m, find the area of the Sector 3

OR

In the given figure arcs have been drawn of radius 7cm each with vertices A, B, C and D of quadrilateral ABCD as centres Find the area of the shaded region



(For Visually Impaired Only)

A horse is tied to a peg corner of square shape grass field of side 15m by means of a 5m long Rope. Find the area of that part of the field in which the horse can graze.

31. Find the value of m for which the roots of the equation. $mx(6x + 10) + 25 = 0$, are equal. 3

SECTION D

This section consists of 4 questions of 5 marks each.

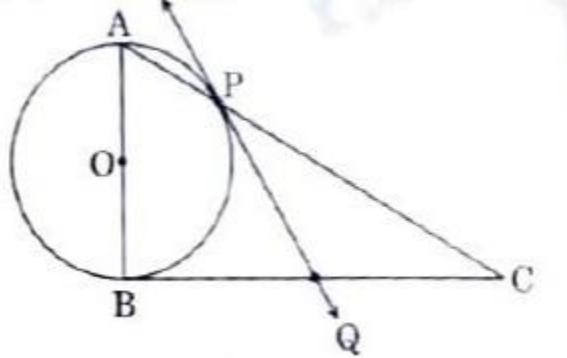
32. Draw the graph of the equations $x - y + 1 = 0$ and $3x + 2y - 12 = 0$ determine the coordinates of the vertices of the triangle formed by these lines and x-axis and shade the triangular region 5

OR

A train covered certain distance at a uniform speed if the train would have been 6km/hour faster it would have taken 4 hours less than the scheduled time and if the train were slower by 6 km/hour it would have taken 6 hours more than the scheduled

time Find the length of the journey. .

33. If the angle of elevation of a cloud from a point 10 meters above a lake is 30° and the angle of depression of its reflection in the lake is 60° , find the height of the cloud from the surface of the lake. 5
34. In figure a triangle ABC with $\angle B = 90^\circ$ shown. Taking AB as diameter, a circle has been drawn intersecting AC at point P. Prove that the tangent drawn at point P bisect BC. 5



(For Visually Impaired Only)

Prove that the opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle.

35. Student noted the number of cars passing through his spot on a road for 100 periods each of 3 minutes and summarised it in the table given below find the mean and the median of the following data 5

Number of cars	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency (Periods)	7	14	13	12	20	11	15	8

OR

median of the following data is 50 find the values of P and Q if the sum of frequency is 90, also find the mode

Marks	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Frequency	p	15	25	20	q	8	10

SECTION E

This section consists of three case study based questions of 4 marks each

36. Manpreet Kaur is the national record holder for women in the shot-put discipline. Her throw of 18.86m at the Asian Grand Prix in 2017 is the biggest distance for an Indian female athlete. Keeping her as a role

model, Sanjitha is determined to earn gold in Olympics one day. Initially her throw reached 7.56m only. Being an athlete she regularly practiced both in the morning and in the evenings and was able to improve with the distance by 9cm every week. During the special camp for 15 days she started with 40 throws and every day kept increasing the number throws by 12 to achieve this remarkable progress.



Based on the above information answer the following questions:

- | | |
|--|---|
| (i) How many throws Sanjitha practiced on 11th day of the camp ? | 1 |
| (ii) What would be Sanjitha's throw distance at the end of 6 months? | 2 |

OR

When will she be able to achieve a throw of 11.16 m?

- | | |
|---|---|
| (iii) How many throws did she do during the entire camp of 15 days? | 1 |
|---|---|



37.

Vijay is trying to find the average height of a tower near his house. He is using the properties of similar triangles. The height of Vijay's house is 20m when Vijay's house casts a shadow 10m long on the ground. At the same time, the tower casts a shadow 50m long on the ground. And the house of Ajay casts 20m long shadow on the ground.

Based on the above information answer the following questions.

- | | |
|--|---|
| (i) What is the height of tower? | 1 |
| (ii) What is the height of Ajay's house? | 1 |
| (iii) When the tower cast shadow 40m same time what will be the length of the shadow of Ajay's house | 2 |

OR

When the tower cast shadow of 40m, same time what will be the length of the shadows of Vijay's house?

38. The word 'circus' has the same root as 'circle'. In a closed circular area, various entertainment acts including human skill and animal training are presented before the crowd. A circus tent is cylindrical upto a height of 8 m and conical above it. The diameter of the base is 28 m and total height of tent is 18.5 m.



Based on the above information answer the following questions

- (i) Find slant height of the conical part
- (ii) Determine the floor area of the tent
- (iii) Find area of the cloth used for making tent

1

1

2

OR

Find total volume of air inside the empty tent
