SET-2

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O.P. Code D/2/25

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Candidate must write the Q.P.

Mock Exam:2025-26

रोल नं. Exam Roll No.				

Class – 10th

Xkf.kr &lSökfUrd

MATHEMATICS – Theory

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Time allowed: 3 hours	Maximum marks: 80

UkksV@NOTE:

(i)Ñi;k tkWap dj ysa fd bl iz”u & i= esa eqfnzr i`"B 13 gSaA

Please check that this question paper contains 13 printed pages.

(ii)Ñi;k tkWap dj ysa fd bl iz”u &i= esa 38 iz”u gSaA

Please check that this question paper contains 38 questions.

(iii)iz”u &i= esa nkfgus gkFk dh vksj fn, x, iz'u & i= dksM dks ijh{kkFkhZ mRrj iqfLrdk ds eq+[k &i`"B ij fy[ksaA

Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.

(iv) Ñi;k iz”u dk mRrj fy[kuk 'kq# djus ls igys] mRrj iqfLrdk esa iz'u dk Øekad vo'; fy[ksaA

Please write down the serial number of the question in the answer-book before attempting it.

(v) bl iz”u &i= dks i<us ds fy, 15 feuV dk le; fn;k x;k gSA iz”u &i= dk fooj.k iwokZâ es 10-15 cts fd;k tk,xkA 10-15 cts ls 10-30 cts rd Nk= dsoy iz'u & i= dks i<saxs vkSj bl vof/k ds nkSjku os mRRkj iqfLrdk ij dksbZ mRRkj ugha fy[ksaxsA

15 minutes time has been allotted to read this question paper. The question paper will be distributed at 10:15 a. m. From 10:15 a.m. to 10:30 a.m., the students will read the question paper only and will not write any answer on the answer – book during this period.

General Instructions

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 section A, B, C, D and E.
3. In Section A, question numbers 1-18 are Multiple Choice Questions (MCQs) and question number 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 o2 marks each.
5. In Section C, question numbers 26-31 are Short Answer (SA) type questions, carrying 03 mark 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 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 questions of section D has been provided.
9. Draw neat and clear figures wherever required. Take $\pi = \frac{22}{7}$ wherever required if not stated.
10. Use of calculators is not Allowed.

Section -A

Multiple Choice Questions (Each Que. carries 1 M)

1. Which of the following is not an irrational number?

(a) $7\sqrt{5}$ (b) $\sqrt{2} + 2\sqrt{2}$

(c) $(\sqrt{7} - 3) - \sqrt{7}$ (d) $\sqrt{3} + 2$

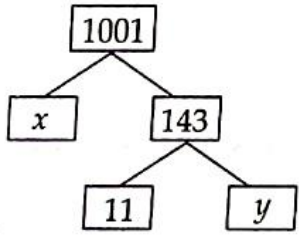
2. If $\sin\theta = \frac{7}{25}$ then $\cot\theta$ is equal to

(a) $\frac{7}{25}$ (b) $\frac{24}{7}$ (c) $\frac{7}{24}$ (d) $\frac{24}{25}$

3. If the HCF of 408 and 1032 is expressed in the form $1032 \times 2 + 408 \times p$ then the value of p is

(a) 5 (b) – 5 (c) 4 (d) - 4

4. The values of x and y in the given figure are



(a) 7, 13 (b) 13, 7 (c) 9, 12 (d) 12, 9

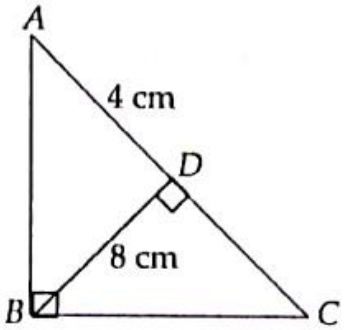
5. The discriminant of the quadratic equation $6x^2 - 7x + 2 = 0$ is

(a) 0 (b) -1 (c) 1 (d) 2

6. Two dice are thrown together. Then, the probability that sum of the two numbers will be multiple of 4 is

(a) $-\frac{1}{4}$ (b) $\frac{1}{2}$ (b) $-\frac{1}{2}$ (d) $\frac{1}{4}$

7. In the given figure, ∠ABC = $90^0$and BD ⊥ AC. If BD = 8 cm and AD = 4 cm, then the value of CD is.



(a) 16 cm (b) 8 cm (c) 4 cm (d) 10 cm

8. For grouped data, if $\sum f_i$ = 18, $\sum f_i x_i$ = 4p + 60 and mean of distribution is 20, then the value of p is

(a) 75 (b) 80 (c) 100 (d) 70

9. If $50\sqrt{3}$ m high tower makes angle of elevation at a point on ground which is 150 m away from it's foot then find the angle of elevation.

(a) 30^0 (b) 90° (c) 60^0 (d) 0^0

10. The minute hand of a clock is 10 cm long. The area swept by the minute hand between 8 : 00 am to 8 : 20 am is

(a) 104.76 cm^2 (b) 104 cm^2

(c) 100.76 cm^2 (d) 100 cm^2

11. The degree of polynomial $7x^6 + 4x^3 + \frac{2}{7}x^4$ + x – 9 is

(a) 4 (b) 3 (c) 0 (d) 6

12. The distance of the point (3, 5) from the X- axis is

(a) 3 units (b) 5 units (c) 8 units (d) 4 units

13. Find the ratio between total surface area of cone and cylinder. If the height and radius of both objects are equal and radius is 7 cm and height is 24 cm.

(a) 16 : 31 (b) 16 : 15 (c) 15 : 16 (d) 15 : 31

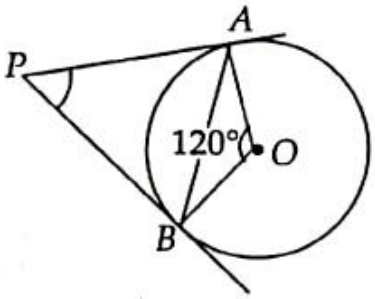
14. If an arc subtends angle of 90° to the centre O with radius of 35 cm then length of arc is

(a) 52 cm (b) 50 cm (c) 65 cm (d) 55 cm

15. The simplified value of (1 - cos^2A) . $cosec^2$A is

(a) – 1 (b) 1 (c) 0 (d) 2

16. In the given figure, O is the centre of the circle with PA and PB as tangents. If measure of ∠AOB = 120^0 then ΔPAB an



(a) Isosceles triangle (b) equilateral triangle

(c) Scalene triangle (d) none of the above

17. If the points A(4, 3) and B(x, 5) are on the circle with centre O (2, 3) then the value of x is

(a) 5 (b) 6 (c) 2 (d) 4

18. If the difference of mode and median of a data is 28 then the difference of median and mean is

(a) 10 (b) 12 (c) 14 (d) 16

Assertion-Reason Based Questions

In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices,

(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.

19. Assertion (A) If α and β are the zeroes of the polynomial x^2 + 2x – 15, then $\frac{1}{\alpha} + \frac{1}{\beta}\ is\ \frac{2}{15}$.

Reason (R) If α and β are the zeroes of a quadratic polynomial ax^2 + bx + c then

$\alpha + \beta = -\frac{b}{a}\ and\quad \alpha\beta = \frac{c}{a}$.

20. Assertion (A) In two similar triangles ΔPQR and ΔABC, ratio of sides PQ and AB is 3 : 5 then ratio of sides PR and AC is also 3 : 5.

Reason (R) If sides of triangles are in proportional then triangles are congruent.

Section-B

Very Short Answer Type Questions [Each Q. carries 2 M)

21. (a) A father's age is three times the sum of the ages of his two children. After 5 years his age will be two times the sum of their ages. Find the present age of the father.

OR

(b) In a two-digit number, the ten's digit is three times the unit's digit. When the number is decreased by 54, then the digits are reversed. Find the number.

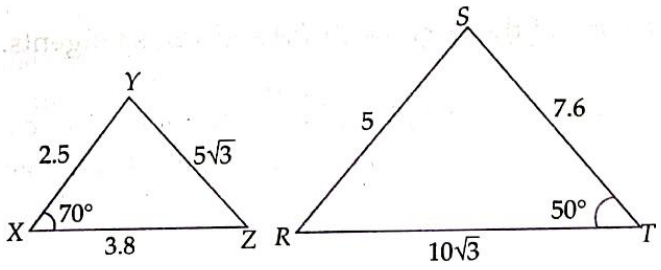
22. Find the length of a tangent drawn to a circle, with radius 5 cm, from a point 13 cm away from the centre of the circle.

23. (a) If $\cos \alpha = \frac{1}{2}$ and $\tan \beta = \frac{1}{\sqrt{3}}$ then find $\sin(\alpha + \beta)$, where α and β are both acute angles.

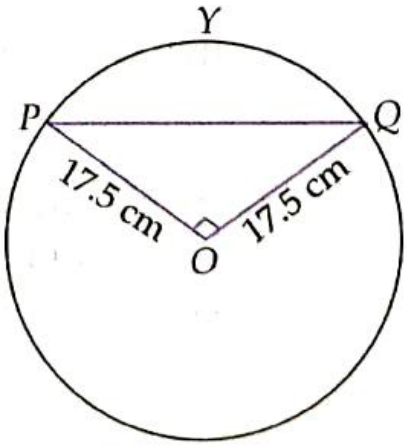
OR

(b) Find an acute angle θ, when $\frac{\cos\theta - \sin\theta}{\cos\theta + \sin\theta} = \frac{1-\sqrt{3}}{1+\sqrt{3}}$.

24. From the given figures, find ∠R.



25. Find the area of segment PYQ, if radius of the circle is 17.5 cm and ∠POQ = 90^0. $\left(\text{Take } \pi = \frac{22}{7}\right)$.



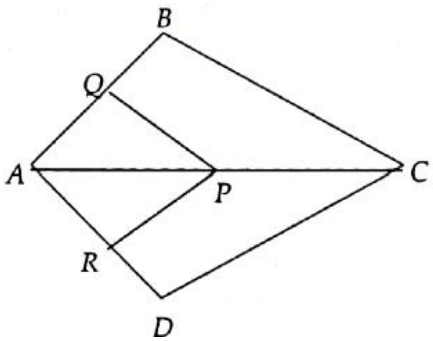
Section-C

Short Answer Type Questions (Each Que carries 3 M)

26. Prove that $5\sqrt{3} + 2$ is irrational. It is known that $\sqrt{3}$ is an irrational number .

27. Prove that $\frac{\cos\theta - \sin\theta + 1}{\cos\theta + \sin\theta - 1} = cosec\ \theta + \cot\theta$.

28. (a) In figure, if PQ ∥ BC and PR ∥ CD. Prove that $\frac{AR}{AD} = \frac{AQ}{AB}$.



OR

(b) Two triangles ΔABC and ΔDBC are on the same base BC and on the same side of BC in which $\angle A = \angle D = 90^0$ .If CA and BD meet each other at E then show that AE.EC = BE.ED.

29. (a) If α and β are zeroes of a quadratic polynomial $x^2 - 25$, then form a quadratic polynomials whose zeroes are $1 + \alpha$ and $1 + \beta$.

Or

(b) Can the quadratic polynomial $x^2 + kx + k$ have equal zeroes for some odd integer k >1? Justify .

30. Solve the following system of linear equations graphically 3x + y - 11 = 0 and x - y - 1 = 0
Also, find the area of the region bounded by these lines and the Y-axis.

31. From a well-shuffled pack of 52 cards, few cards of same colour are missing. If P (drawing a red card) = $\frac{2}{3}$ and P (drawing a black card) = $\frac{1}{3}$ then which colour cards are missing and how many?

Section-D

Long Answer Type Questions [Each Que. carries 5 M]

32. (a) If a hollow cube of internal edge 22 cm is filled with spherical marbles of diameter 0.5 cm and it is assumed that $\frac{1}{8}$ space of the cube remains unfilled. Then, find the number of marbles that the cube can accommodate.

OR

(b) A medicine-capsule is in the shape of a cylinder of diameter 0.5 cm with two hemispheres stuck to each of its ends. The length of entire capsule is 2 cm. Find the capacity of the capsule.

33. Find the missing frequencies in the following frequency distribution table, if the total number of students is 120 and median is 34.

Marks obtained	0-10	10-20	20-30	30-40	40-50	50-60
Number of Students	10	x	30	35	Y	13

34. The radii of two concentric circles are 13 cm and 8 cm. AB is a diameter of the bigger circle. BD is a tangent to the smaller circle touching it at D. Find the length of AD.

35. (a) A passenger, while boarding the plane, slipped from the stairs and got hurt. The pilot took the passenger in the emergency clinic at the airport for treatment. Due to this, the plane got delayed by half an hour. To reach the distance 1500 km away in time, so that the passenger could catch the connecting flight the speed of the plane was increased by 250 km/hour than the usual speed. Find the usual speed of the plane.

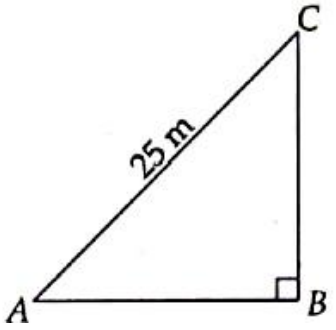
OR

(b) To fill a swimming pool two pipes are used. If the pipe of larger diameter used for 4 hours and the pipe of smaller diameter 9 hours, only half of the pool can be filled. Find, how long it would take for each pipe to fill the pool separately, if the pipe of smaller diameter takes 10 hours more than the pipe of larger diameter to fill the pool?

Section-E

Case-Study/Passage-Based[Each Que carries 4 M)

36. A circus artist is climbing through 25 m long rope which is highly stretched and tied from the top of a vertical pole to the ground as shown below.



Based on the above information, answer the following questions.

(i) Find the height of the pole if the angle made by the rope to the ground level is 30°. (1)

(ii) Find the height of the pole, if angle made by rope to the ground level is 45°. (1)

(iii) If the angle made by the rope to the ground level is 45° then find the distance between artist and pole at ground level. (1)

(iv) If the angle made by the rope to the ground level is 30° and 5m rope is broken then find the height of pole. (1)

37. Anuj gets pocket money from his father everyday. Out of the pocket money, he saves Rs 10 on first day, Rs 17 on second day and Rs 24 on third day and so on.

On the basis of above information, answer the following questions.

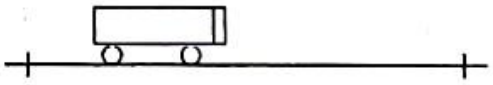
(i) What is the amount saved by Anuj on 14th day? (1)

(ii) What is the total amount saved by Anuj in 17 days? (1)

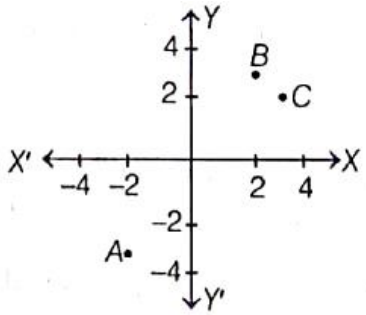
(iii) On which day, he saves 15 times as much as he saved on Ist day? (1)

(iv) What is ratio of total amount saved in 7 days and 23 days? (1)

38. There are two routes to travel from source A to destination B by bus. First bus reaches at B via point C and second bus reaches from A to B directly. The position of A, B and C are represented in the following graph.



Scale: X- axis 1 unit = 1 km, Y- axis 1 unit = 1 km.



Based on the above information, answer the following questions.

(i) Find the distance between A and B. (1)

(ii) If it is assumed that both buses have same speed then to reach early by which bus do you want to travel from A to B (1)

(iii) (a) If the fare for first bus is Rs10 per km and fare for second bus is Rs 15 per km. Then, find the ratio between total fares buses. (1)

(iv) In which ratio X-axis divides the line joining to point A and C. (1)