


SET-1
Mock Exam:2025-26

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O.P. Code D/1/25

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Candidate must write the O.P.

Class – 10th
Xkf.kr &ISökfUrd
MATHEMATICS – Theory

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Time allowed: 3 hours

vf/kdrevad % 80

Maximum marks: 80

UkksV@NOTE:

(i)Ñi;k tkWap dj ysa fd bl iz"u & i= esa eqfnzr i`"B 12 gSaA

Please check that this question paper contains 12 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

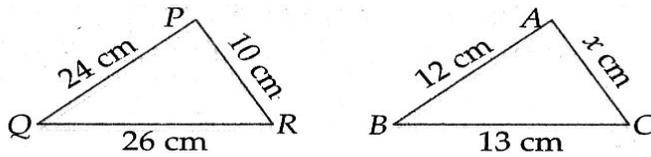
Read the following instructions carefully and follow them.

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 2 marks each.
5. In Section C, question numbers 26-31 are Short Answer (SA) type questions, carrying 3 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. If $p^2 = \frac{32}{70}$ then p is a/an
 - (a) Whole number
 - (b) integer
 - (c) Rational number
 - (d) irrational number
2. The HCF of 30, 72 and 432 is
 - (a) 13
 - (b) 7
 - (c) 5
 - (d) 6
3. If the probability that it will rain tomorrow is 0.75, then the probability that it will not rain tomorrow is
 - (a) 0
 - (b) 1
 - (c) 0.50
 - (d) 0.25
4. Two tangents, drawn at the end points of diameter of a given circle are always
 - (a) Parallel
 - (b) perpendicular
 - (c) Intersect each other
 - (d) None of these
5. If the difference of mode and median of a data is 24, then the difference of median and mean is
 - (a) 12
 - (b) 24
 - (c) 8
 - (d) 36
6. If the distance between the points $(p, -5)$ and $(4, 10)$ is 17 units, then the values of p are
 - (a) - 4, 12
 - (b) - 4, 8
 - (c) 0, 12
 - (d) 4, 12

7. The corresponding sides of two similar triangles PQR and ABC are given in the figure. Then, the value of x is



- (a) 10 cm (b) 5 cm (c) 15 cm (d) 25 cm
8. In a circle of radius 28 cm, a sector subtends an angle of 120° at the centre, then area of sector is
- (a) 820 cm^2 (b) 817.66 cm^2
 (c) 821.33 cm^2 (d) 823.33 cm^2
9. From a solid circular cylinder with height 10 cm and radius of the base 6 cm, a right circular cone of the same height and same base is removed, then the volume of remaining solid is
- (a) $280 \pi \text{ cm}^3$ (b) $330 \pi \text{ cm}^3$
 (c) $240 \pi \text{ cm}^3$ (d) $440 \pi \text{ cm}^3$
10. In a circle of radius 21cm, an arc subtends an angle of 60° at the centre, then the length of the arc is
- (a) 22 cm (b) 20 cm (c) 21 cm (d) 19 cm
11. If the pair of equations $3x + 4y - 8 = 0$ and $px + \frac{8y}{3} = 15$ has no solution, then the value of p is
- (a) 2 (b) $\frac{2}{3}$ (c) 3 (d) 1
12. In a ΔABC , right angled at B if base line is $AB = 12 \text{ cm}$ and $BC = 5 \text{ cm}$, then the value of $\cos C$ is
- (a) $\frac{5}{13}$ (b) $\frac{13}{5}$ (c) $\frac{5}{17}$ (d) $\frac{17}{5}$

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)** $5x^2 + 14x + 10 = 0$ has no real roots.

Reason (R) $ax^2 + bx + c = 0$ has no real roots if $b^2 < 4ac$.

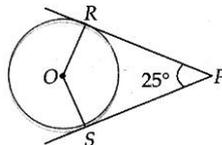
20. **Assertion (A)** Zeroes of $f(x) = x^2 - 4x - 5$ are 5, -1.

Reason (R) The polynomial whose zeroes are $2 + \sqrt{3}$, $2 - \sqrt{3}$ is $x^2 - 4x + 7$.

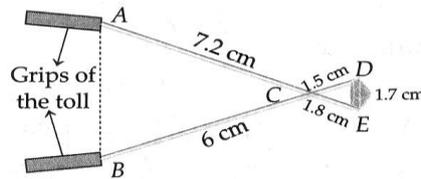
Section-B

Very Short Answer Type Questions (Each Que, Carries 2 M)

21. In the given figure, if $\angle RPS = 25^\circ$, then find the value of $\angle ROS$.



22. Ritika's grandfather is a jeweler who needs to pick up a newly cut sapphire and place it in a necklace. To do so he uses a tool that is pictured in the figure below. The tool must be held in a specific manner as to not damage the sapphire.



(**Note** The figure is not to scale.)

Ritika tells her grandfather the width at which he needs to hold the tool.

Based on the above information, answer the following questions.

(i) How does Ritika know how wide apart the grips of the tool are to be held?

(ii) Find the width at which Ritika's grandfather must hold the tool to safely place the sapphire in the necklace. Show your work.

23. If $\cot \theta = b$, find the value of $\frac{a \sin \theta - b \cos \theta}{b \cos \theta + a \sin \theta}$.

24. (a) Solve for x : $\frac{1}{(x-1)(x-2)} + \frac{1}{(x-2)(x-3)} = \frac{2}{3}$, $x \neq 1, 2, 3$

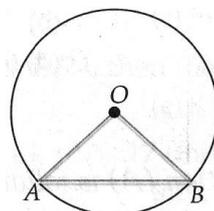
OR

(b) Find the value of k for which the given equation has real and equal roots. $2x^2 - 10x + k = 0$

25. (a) In a circle of radius 28 cm, an arc subtends an angle 60° at the centre. Find the length of arc and area of the sector.

OR

(b) Find the area of minor segment, if radius of the circle is 14 cm and $\angle AOB = 90^\circ$.



Section-C

Short Answer Type Questions [Each Que. carries 3 M]

26. A dealer sells a toy for Rs 39 and gains as much percent as the cost price of the toy. Find the cost price of toy.
27. The vertices of ΔABC are $A(4, 6)$ $B(1, 5)$ and $C(7, 2)$. A line is drawn to intersect sides AB and AC at D and E , respectively such that $\frac{AD}{AB} = \frac{AE}{AC} = \frac{1}{4}$. Determine the coordinates of D and E .

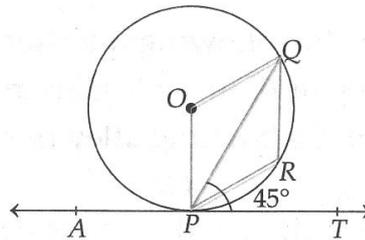
28. (a) Prove the trigonometric identity

$$\sqrt{\frac{\operatorname{cosec} A - 1}{\operatorname{Cosec} A + 1}} + \sqrt{\frac{\operatorname{Cosec} A + 1}{\operatorname{Cosec} A - 1}} = 2 \sec A.$$

OR

- (b) If $\tan \theta + \sin \theta = m$ and $\tan \theta - \sin \theta = n$, then show that $(m^2 - n^2)^2 = 16 mn$ or $(m^2 - n^2) = 4\sqrt{mn}$.

29. (a) In the given figure, if PQ is a chord of a circle with centre O and PT is a tangent at P , such that $\angle QPT = 45^\circ$, then find $\angle PRQ$.



OR

- (b) Prove that the length of two tangents drawn from an external point on a circle are equal.
30. A bag contains 8 red balls and some blue balls. If the probability of drawing a blue ball is three times of a red ball, then find the number of blue balls in the bag.

31. If α and β are the zeroes of the quadratic polynomial $f(x) = 3x^2 - 4x + 1$, then find a quadratic polynomial whose zeroes are $\frac{\alpha^2}{\beta}$ and $\frac{\beta^2}{\alpha}$.

Section-D

Long Answer Type Questions (Each Que, carries 5 M)

32. The shadow of a vertical tower on a ground level increases by 10 m, when the angle of elevation of the Sun changes from 45° to 30° . Find the height of the tower correct to two decimal places. ($\sqrt{3} = 1.73$)
33. Find the missing frequencies in the following frequency distribution table, if $N = 80$ and median is 35.

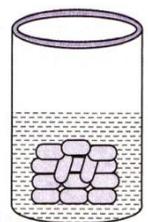
Marks Obtained	0-10	10-20	20-30	30-40	40-50	50-60	Total
Number of Students	7	x	20	y	24	8	80

34. (a) A solid is composed of a cylinder with hemispherical ends. If the whole length of the solid is 104 cm and the radius of each hemispherical end is 7 cm, then find the cost of polishing its surface at the rate of Rs 2 per dm^2 .

(take $\pi = \frac{22}{7}$).

OR

- (b) A gulabjamun contains sugar syrup upto about 30% of its volume. Find approximately how much syrup would be found in 45 gulabjamuns, each shaped like a cylinder with two hemispherical ends with length 5 cm and diameter 2.8 cm (see figure).



35. Rohan repays his total loan of Rs 118000 by paying every month starting with the first installment of Rs 1000. If he increase the installment by Rs 100 every month, what amount will be paid by him in the 30th installment? What amount of loan has he paid after 30th installment?

OR

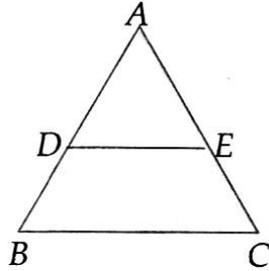
- (b) The sum of the third and seventh terms of an AP is 6 and their product is 8. Find the sum of first sixteen terms of the AP.

Section-E

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

36. Reena and Sonia went to a mall on 14th November 2022. On the occasion of Children's Day, the mall was offering movie tickets and bowling alley tickets at discounted prices. The cost of a movie ticket was Rs 70 more than twice the cost of a bowling alley ticket. Sonia purchased five bowling alley tickets and three movie tickets for a total of Rs 870.
- (i) Find the price of a movie ticket and a bowling alley ticket. (2)
- (ii) On the next day, Reena took her siblings to the mall. She observed that prices of the movie ticket and the bowling alley ticket had come back to their standard rates of Rs 220 and Rs 90, respectively. She bought a total of 10 tickets, costing her Rs 1420. Find the number of movie tickets and bowling alley tickets she bought. (2)

37. A group of students to volunteer are working in making a safety board for school. They prepared on triangular safety board for their school with title "School Ahead" and 'Drive Slow' in two parts of the triangular board as shown in below figure.



Where, $DE \parallel BC$

Based on the above information, answer the following questions.

- (i) Show that $\triangle ADE \sim \triangle ABC$ (1)
- (ii) (a) If $AD = 2\text{m}$, $BD = 5\text{ cm}$ and $AE = 3\text{ cm}$, then find EC . (1)
- (iii) If $AD = 3\text{cm}$, $AB = 9$, $BC = 6\text{ cm}$, then evaluate DE . (1)
- (iv) If $\angle A = 60^\circ$ and $\angle ADE = 50^\circ$, then find $\angle C$. (1)
38. A merchant has 120 soap cubes of 1st kind in box I, 180 soap cubes of 2nd kind in box II and 240 soap cubes of 3rd kind in box III. He wants to sell the soap cubes by filling three kinds of soap cubes in small packets of equal capacity.
- Based on the above information, answer the following questions.
- (i) What would be the largest capacity of such packets? (1)
- (ii) If merchant decided to sell only second and third kinds of soap cubes, then how many small packets are required? (1)

(iii) If he decided to put 3rd kind of soap cubes, separately in small packets, then how many packets are needed? (1)

(iv) How many total small packets are needed to pack all 3 kinds of soap cubes? (1)