



परमाणु ऊर्जा शिक्षण संस्था
Atomic Energy Education Society

आवधिक परीक्षा-II/PT-II Examination 2025 - 26

कक्षा/Class : IX

अवधि/Duration : 3 HOURS

विषय/Subject : MATHEMATICS

अधिकतम अंक/Maximum Marks :80

General Instructions: Read and follow the instructions carefully.

- 1) This Question Paper is divided into 5 Sections A, B, C, D and E and contains 38 questions. All Questions are compulsory.
- 2) 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.
- 3) In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
- 4) In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
- 5) In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
- 6) 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.
- 7) 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.
- 8) Use of calculators is not allowed.
- 9) Take $\pi = \frac{22}{7}$, wherever required if not stated.

Section – A

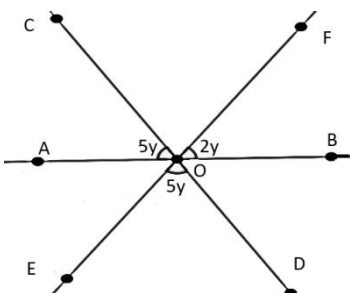
(Section A consists of twenty questions of 1 mark each)

Q. No.	Questions	Mark(s)
01	Which of the following is an irrational number? a) $\frac{\sqrt{7}}{2}$ b) $\frac{\sqrt{125}}{\sqrt{5}}$ c) $\sqrt{361}$ d) $\sqrt{\frac{9}{16}}$	1
02	$\frac{1}{\sqrt{7}-\sqrt{3}} =$ a) $\sqrt{7} + \sqrt{3}$ b) $\frac{(\sqrt{7}-\sqrt{3})}{4}$ c) $\sqrt{7} - \sqrt{3}$ d) $\frac{(\sqrt{7}+\sqrt{3})}{4}$	1
03	The value of $\sqrt{10} \cdot \sqrt{15} =$ a) $6\sqrt{5}$ b) $5\sqrt{6}$ c) $\sqrt{25}$ d) $10\sqrt{5}$	1
04	Degree of polynomial $p(x) = 0.x^4 - \frac{4}{5}x^3 + x^2 + 0.x - 3$ is a) 4 b) 3 c) $-\frac{4}{5}$ d) 0	1

19	Assertion: $\frac{437}{999}$ is rational number. Reason: A number $\frac{p}{q}$ is said to be a rational number if its decimal expansion is terminating / non-terminating recurring.	1
20	Assertion: $p(x) = x + \frac{1}{x}$ is a polynomial of degree 1. Reason: An expression $a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \dots + a_2 x^2 + a_1 x + a_0$ is said to be a polynomial of degree n where n is whole number and $a_n \neq 0$	1

Section – B

(Section B consists of five questions of 2 marks each)

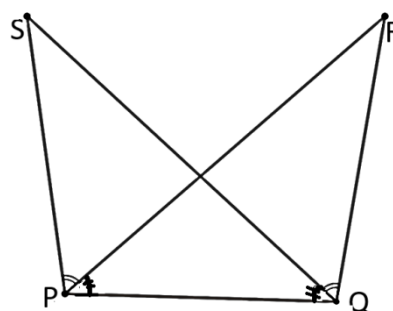
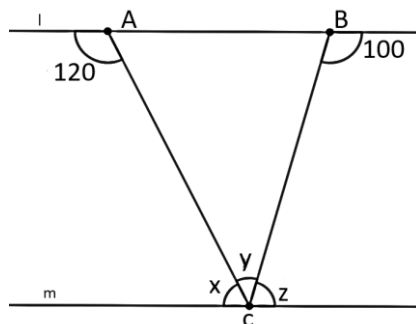
21	Write one rational and one irrational number lying between 2 & 3.	2
22	Using suitable identity evaluate $\left(\frac{1}{4}\right)^3 + \left(\frac{1}{3}\right)^3 - \left(\frac{7}{12}\right)^3$ OR $(102)^3$	2
23	The cost of a laptop is twice of the cost of a mobile phone. Write a linear equation in two variables to represent this data. Hence find two solutions of the linear equation so obtained.	2
24	Points A, B, C and D are points on a straight line. If the lengths AB is equal to CD, then prove that AC is equal to BD.	2
25	From the adjacent figure find the value of y and reflex $\angle DOE$.  OR If two lines intersect then show that vertically opposite angles are equal.	2

Section – C

(Section C consists of six questions of 3 marks each)

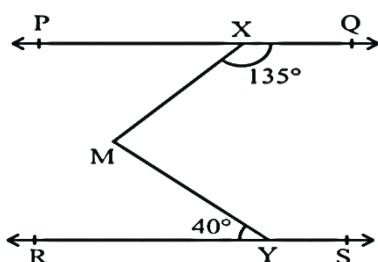
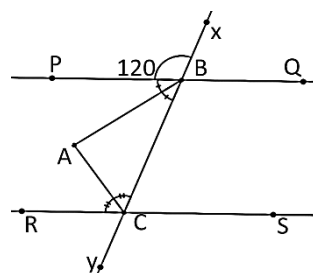
26	Express $1.\bar{2}$ in $\frac{p}{q}$ form. OR Find the value of $\frac{4}{(216)^{-2/3}} + \frac{1}{(256)^{-3/4}} + \frac{2}{(243)^{-1/5}}$	3
27	Find the value of a such that $(x - 1)$ are the factors of the polynomial $p(x) = x^3 - ax^2 - 13x + 15$. Hence, verify whether $(x+3)$ is a factor of the given polynomial $p(x)$. OR Using suitable identities factorise the following i) $25x^2 + 4y^2 + 9z^2 - 20xy - 12yz + 30xz$ ii) $64x^3 - 125y^3$	3

28	If $(2, -3)$ is a solution of $2(x + 1) - 7(y - 2) = k$ then find the value of k . Hence write the equation in general form of $ax + by + c = 0$ and write the values of a , b & c .	3
29	Plot the points $(-2, 3)$, $(5, 3)$, $(5, -4)$ and $(-2, -4)$ on graph paper. If these points are joined in an order then name the geometric figure so obtained.	3
30	From the adjacent figure, if $l \parallel m$ then find the values of x , y & z .	3
31	In the given figure, if $PS = QR$, $\angle SPR = \angle RQS$ and $\angle RPQ = \angle SQP$ then prove that $QS = PR$ and $\angle S = \angle R$.	3



Section – D
(Section D consists of four questions of 5 marks each)

32	(a) Find the value of a and b , if $\frac{\sqrt{3}-1}{\sqrt{3}+1} + \frac{\sqrt{3}+1}{\sqrt{3}-1} = a + b\sqrt{3}$.	5
33	Factorise the polynomial $p(x) = x^3 - x^2 - 14x + 24$.	5
34	In the adjacent figure it is given that $PQ \parallel RS$, AB & AC are bisectors of $\angle PBA$ & $\angle RCA$ respectively. $\angle PBX = 120^\circ$ then find $\angle CAB$ and its reflex angle.	5



OR

If PQ is parallel to RS ,
 $\angle MXQ = 135^\circ$ and $\angle MYR = 40^\circ$,
find $\angle XMY$ and reflex $\angle XMY$

35 Prove that the angles opposite to equal sides of a triangle are equal.

OR

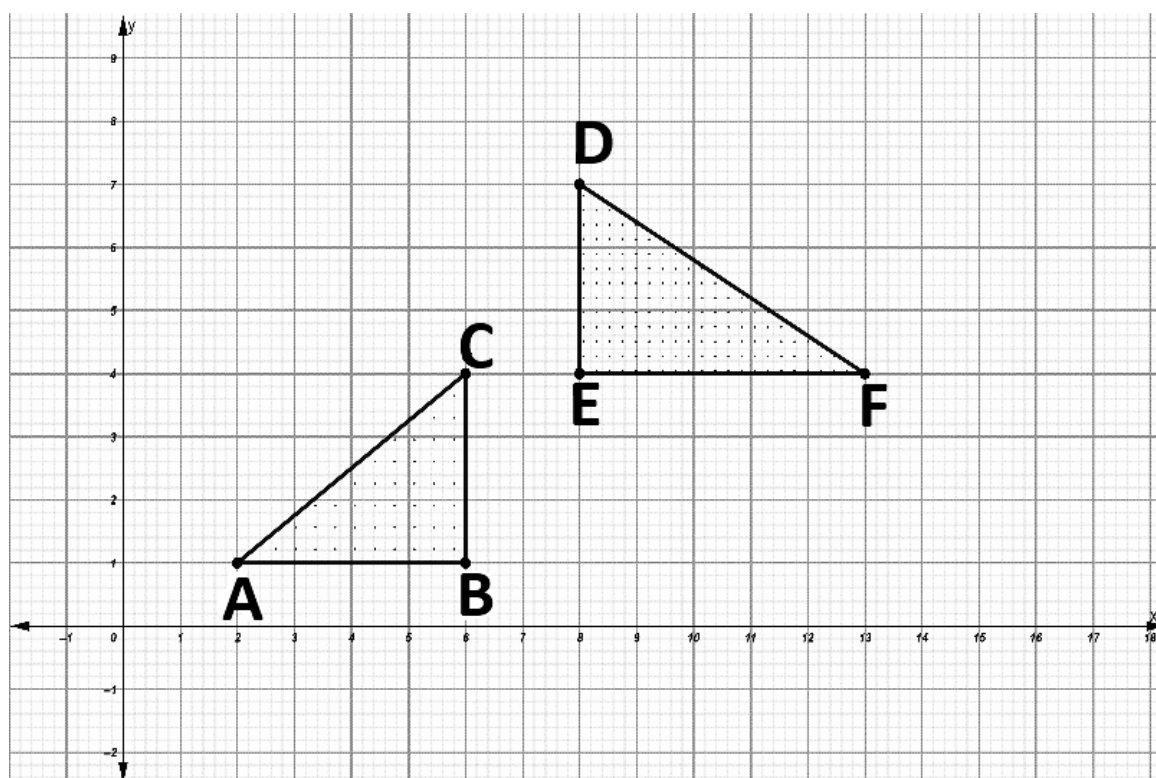
If E is a point inside the square ABCD such that $DE = BE$. Prove that AEC is a straight line.

5

Section – E

(Section E consists of three questions of 4 marks each)

36



Two triangular playgrounds of a residential area are shown in the figure given below.

On the basis of the given information answer the following. (1 + 1 + 2 marks)

i) Write the co-ordinates of A and B.

ii) Write the co-ordinates of E & F.

iii) Find the distance between A & C

OR

Find the area of triangle DEF.

4

37



The vehicle parking is a major problem in urban areas in metro cities. In mall of a metro city the parking charges of a car in parking lot is charged at the rate of Rs 50 per hour for first two hours and Rs 20 per hour for subsequent hours.

4

On the basis of the given information answer the following. (2 + 1 + 1 marks)

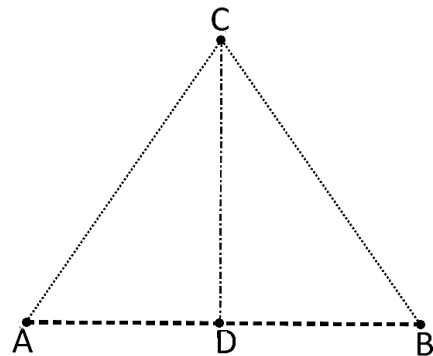
- If total parking time is x hour and total charge is Rs y , then write the linear equation as per the charges of the mall given above.
- without plotting the graph, write the name of the geometrical shape of the graph representing equation obtained in (i)?
- If $y = 100$ then find the value x .

OR

- If $x = 5$ then find the value of y .

38

Two students who are residing in the same building of a locality lying at point C. They are studying in different schools lying at points A & B. The positions of A, B & C are forming a triangle. If they move from C towards to their school in the perpendicular direction of the straight road lying between their school then they reach at the mid point of the segment of the road and moved towards to their respective schools.



4

On the basis of the given information answer the following. (2 + 1 + 1 marks)

- Show that $\triangle ACD$ and $\triangle BCD$ are congruent.

OR

Show that $\angle A = \angle B$

- Which type of triangle ABC is?
- If $AC = (3y + 1)$ km and $BC = (5y - 2)$ km then find the value of y .