



HANSRAJ PUBLIC SCHOOL
SECTOR-6, PANCHKULA
Class: IX Subject: Mathematics
Periodic Test-II (2025-26)

Roll No: 15
Max Marks: 40

Date: 01.08.25
Duration: 1 hour 30 minutes

General Instructions:

- > The question paper consists of questions divided into five sections A, B, C, D, E.
- > All questions are compulsory.
- > Section A comprises 9 questions of 1 mark each.
- > Section B comprises 2 questions of 4 marks each.
- > Section C comprises 3 questions of 3 marks each.
- > Section D comprises 2 questions of 5 marks each.
- > Section E comprises 1 case-study question of 4 marks.

SECTION - A

Q1. What is the degree of the constant polynomial?

- a) Any number b) 0 c) 1 d) not defined.

Q2. Two adjacent angles on a straight line are in the ratio 5:4, then the measure of each one of these angles are:

- a) $100^\circ, 80^\circ$ b) $75^\circ, 105^\circ$ c) $90^\circ, 90^\circ$ d) $60^\circ, 120^\circ$

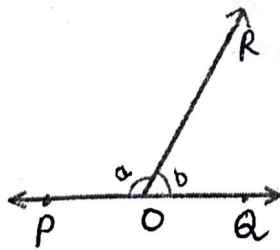
Q3. Zero of the polynomial $p(x) = a^2x$, $a \neq 0$ is:

- a) $x = 0$ b) $x = 1$ c) $x = -1$ ~~d) $a = 0$~~

Q4. If $x + y + 2 = 0$, then $x^3 + y^3 + 8$ equals:

- a) $(x + y + 2)^3$ b) 0 ~~c) $6xy$~~ d) $-6xy$

Q5. $\angle POR$ and $\angle QOR$ form a linear pair. If $a - b = 80$ then the value of a and b respectively are:



- a) $130^\circ, 50^\circ$ b) $50^\circ, 130^\circ$ c) $60^\circ, 120^\circ$ ~~d) $40^\circ, 140^\circ$~~

Q6. In $\triangle ABC$, $\angle A = 100^\circ$. If the bisectors of angles B and C of triangle ABC meet at O, then angle $\angle BOC =$

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a) 160° b) 170° c) 65° ~~d) 140°~~

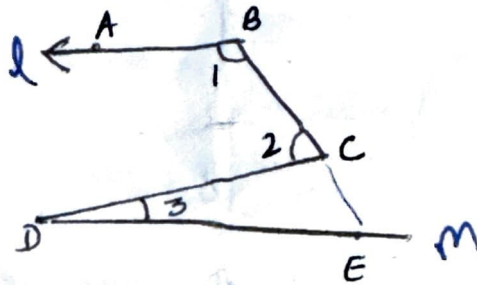
Q7. If $2(a^2 + b^2) = (a + b)^2$, then

- a) $a + b = 0$ ~~b) $a = b$~~ c) $2a = b$ d) $ab = 0$

Q8. Area of the rectangle is given by the polynomial $2x^2 - 7x + 3$ then the possible length and breadth are:

- a) $(x - 3)(2x - 1)$ b) $(x + 3)(2x + 1)$ c) $(x - 3)(2x + 1)$ d) $(x + 3)(2x - 1)$

- Q9. Assertion: In the given figure $l \parallel m$, then $\angle 1 + \angle 2 + \angle 3 = 180^\circ$
 Reason: If two parallel lines are intersected by a transversal, then each pair of consecutive interior angles are supplementary.

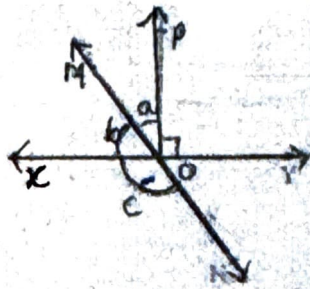


- (a) Both assertion and reason are true, and reason is the correct explanation of assertion.
 (b) Both assertion and reason are true, but reason is not the correct explanation of assertion.
 (c) Assertion is true, but reason is false.
 (d) Assertion is false, but reason is true.

SECTION - B

Q10. Factorize: $27p^3 - 125q^3 - 135p^2q + 225qp^2$

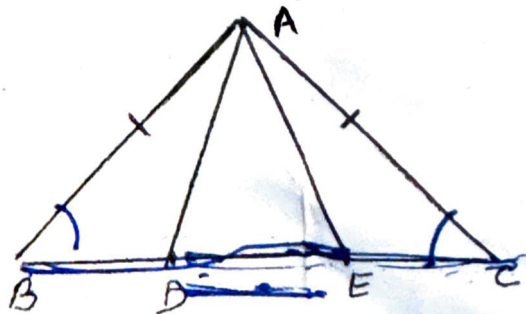
- Q11. In the Figure, lines XY and MN intersect at O. If $\angle POY = 90^\circ$ and $a : b = 2 : 3$, find c.



$x + \frac{1}{x} = 3$
 $x^3 + \frac{1}{x^3} = ?$

Q12. If $x^2 + 1/x^2 = 7$, find the value of $x^3 + 1/x^3$.

- Q13. In an isosceles triangle ABC with $AB = AC$, D and E are points on BC such that $BE = CD$. Show that $AD = AE$.

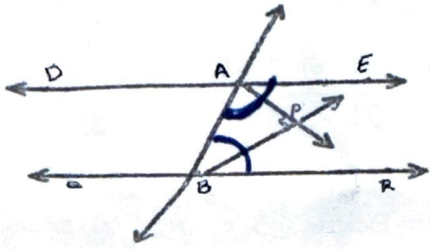


SECTION - C

Q14. Simplify: $(2x - 5y)^3 - (2x + 5y)^3$
 $-120x^2y - 250y^3$

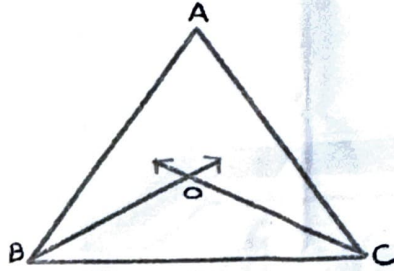
- Q15. If both $(x - 2)$ and $(x - \frac{1}{2})$ are factors of $px^2 + 5x + r$, show that $p = r$.

Q16 If $DE \parallel QR$ and AP and BP are the bisector of $\angle EAB$ and $\angle RBA$ respectively. Prove that $\angle APB = 90^\circ$



OR

Bisectors of $\angle B$ and $\angle C$ of a triangle ABC intersect each other at the point O . Prove that $\angle BOC = 90 + \frac{1}{2} \angle A$.



SECTION D

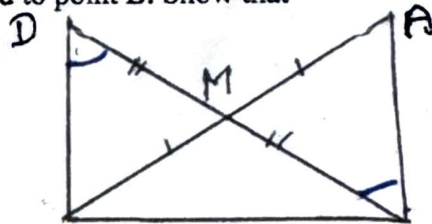
Q17. Find the integral zeroes of the polynomial $2x^3 + 3x^2 - 11x - 6$.

OR

The polynomial $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ when divided by $(x - 1)$ and $(x + 1)$ leaves the remainder 5 and 19 respectively. Find the value of a and b . Hence find the remainder when $f(x)$ is divided by $(x - 2)$.

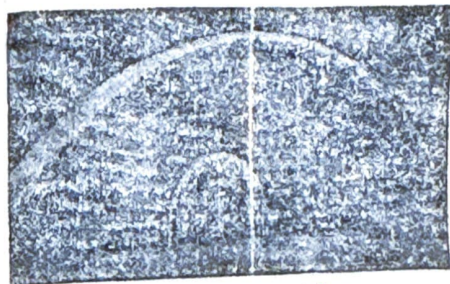
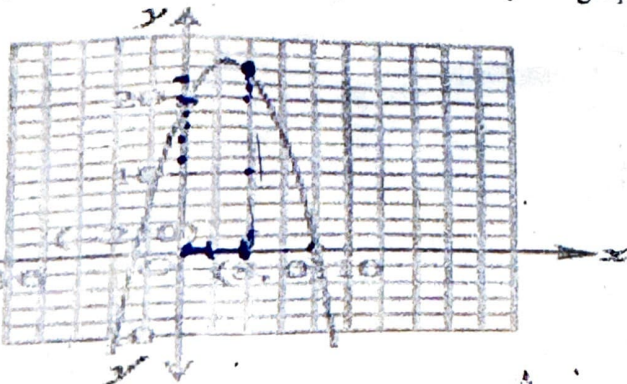
Q18. In right triangle ABC , right angle at C , M is the mid-point of hypotenuse AB . C is joined to M and produced to a point D such that $DM = CM$. Point D is joined to point B . Show that

- i. $\triangle AMC \cong \triangle BMD$
- ii. $\angle DBC$ is a right angle.
- iii. $\triangle DBC \cong \triangle ACB$
- iv. $CM = \frac{1}{2} AB$



SECTION E

Q19. Priya and her husband Aman who is an architect by profession, visited France. They went to see Mont Blanc Tunnel, which is a highway tunnel between France and Italy, under the Mont Blanc Mountain in the Alps, and has a parabolic cross-section. The mathematical representation of the tunnel is given by the polynomial $p(x) = -x^2 + 6x + 16$ and also by the graph.



$$\begin{aligned}
 & -x^2 + 6x + 16 \\
 & -x^2 - 2x + 8x + 16 \\
 & x(x-2) +
 \end{aligned}$$

Based on above, answer the following questions:

- 1) What are the zeroes of the polynomial?
a) 2, -8 b) 0, 8 c) 8, 0 d) -2, 8
- 2) What is the value of the polynomial. represented by the graph, when $x = 4$?
a) 22 b) 23 c) 24 d) 25
- 3) What is the shape of the polynomial ?
a) Hyperbola b) Parabola c) Ellipse d) none of these
- 4) What are the factors of this polynomial ?
a) $(x + 2)(x - 8)$ b) $-(x + 2)(x - 8)$ c) $(x - 2)(x + 8)$ d) $-(x - 2)(x + 8)$

