

General Instructions:

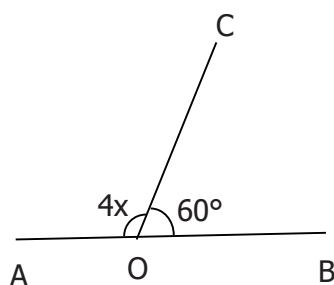
- i) This Question Paper has 5 Sections A - E.
- ii) Section A has 20 MCQs carrying 1 mark each.
- iii) Section B has 5 questions carrying 02 marks each.
- iv) Section C has 6 questions carrying 03 marks each.
- v) Section D has 4 questions carrying 05 marks each.
- vi) Section E has 3 case based integrated units of assessment (04 marks each) with sub-parts of the values of 1,1 and 2 marks each respectively.
- vii) All Questions are compulsory. However, an internal choice in 2 Qs of 5 marks, 2 Qs of 3 marks and 2 Questions of 2marks has been provided. An internal choice has been provided in the 2 marks questions of Section E.

SECTION – A

1. The distance of a point $(-6, -3)$ from the x-axis is:
a) 6 units b) 3 units c) -6 units d) -3 units
2. In $\triangle ABC$, $AB = AC$ and $\angle B = 70^\circ$ then $\angle A$ is equal to
a) 30° b) 35° c) 40° d) 55°
3. Zero of the polynomial, $p(x) = 7x + 5$ is
a) $-\frac{7}{5}$ b) $\frac{5}{7}$ c) $\frac{7}{5}$ d) $-\frac{5}{7}$
4. The point which lies on y-axis at a distance of 5 units in the negative direction of y-axis is
a) $(0, 5)$ b) $(5, 0)$ c) $(0, -5)$ d) $(-5, 0)$
5. The value of the polynomial $p(x) = 2 + x + x^2 - x^3$ at $x = -2$ is
a) 10 b) 12 c) -12 d) -10

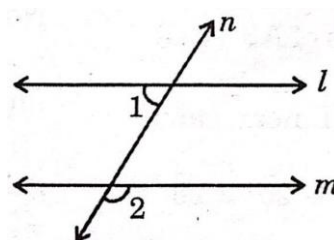
6. The value of x in the given figure is

- a) 20°
- b) 30°
- c) 40°
- d) 15°



7. Every rational number is
a) A natural number b) an integer
c) a real number d) a whole number
8. The number of solutions of the linear equation $2x + 3y = 1$ is
a) 2 b) 3 c) infinite d) 0
9. The degree of the polynomial $9x^5 + 8x^3 + 0x^7 - 8x + 2$ is
a) 7 b) 5 c) 3 d) 1
10. If the point $(3, 2)$ satisfies the equation $3y = ax + 5$, then the value of a is
a) $\frac{1}{5}$ b) $-\frac{1}{5}$ c) $\frac{1}{3}$ d) $-\frac{1}{3}$
11. The measure of an angle is five times its complement. The measure of the angle is
a) 25° b) 35° c) 65° d) 75°
12. The product of $(6 + \sqrt{3})$ and $(6 - \sqrt{3})$ is
a) 3 b) -3 c) 6 d) 33
13. In the given fig., if $l \parallel m$ and $\angle 1 : \angle 2 = 2 : 3$, then $\angle 2$ is

- a) 36°
- b) 72°
- c) 108°
- d) 126°



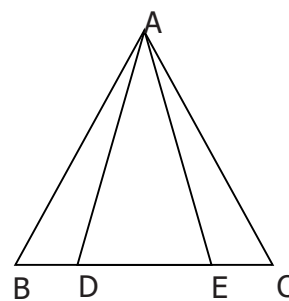
14. Abscissa of all points lying on y-axis is
 a) 0 b) 1 c) -1 d) any number
15. In two triangles ABC and PQR, if $AB = QR$, $BC = PR$ and $CA = PQ$ then
 a) $\triangle ABC \cong \triangle PQR$ b) $\triangle CBA \cong \triangle PRQ$
 c) $\triangle BAC \cong \triangle RPQ$ d) $\triangle PQR \cong \triangle BCA$
16. $\sqrt{9}$ is a _____ number.
 a) rational b) irrational
 c) Neither rational nor irrational d) cannot be explained
17. If $\triangle ABC \cong \triangle PQR$. If $AB = 5$ cm, $\angle B = 40^\circ$ and $\angle A = 80^\circ$, then which of the following is true
 a) $QP = 5$ cm, $\angle P = 60^\circ$ b) $QP = 5$ cm, $\angle R = 60^\circ$
 c) $QR = 5$ cm, $\angle P = 60^\circ$ d) $QR = 5$ cm, $\angle Q = 40^\circ$
18. Degree of a constant polynomial is
 a) 0 b) 1 c) any real number d) not defined

In the following questions (19-20) statements of Assertion (A) is followed by a statement of Reason (R). Choose the correct option:

19. Assertion (A) : If two adjacent angles $\angle AOB = 2(x - 1)$ and $\angle BOC = 3x + 2$ forms a linear pair, for $x = 36^\circ$.
 Reason (R) : If a ray stands on a line, the sum of two adjacent angles formed is 180° .
 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 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.
20. Assertion (A) : $\sqrt{2}, \sqrt{3}$ are examples of irrational numbers.
 Reason (R) : An irrational number can be expressed in the form of $\frac{p}{q}, q \neq 0$.
 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 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

21. In the figure, $AB = AC$ and D and E are points on the side BC such that $BD = EC$. Prove that $AD = AE$.



22. Find four rational numbers between $\frac{-6}{7}$ and $\frac{-5}{6}$.
 (OR)
 Find x if : $\left(\frac{6}{5}\right)^x \left(\frac{5}{6}\right)^{2x} = \frac{125}{216}$.
23. If $p(x) = 2x^2 - x + 3$ then evaluate $p(-2) - p\left(\frac{1}{2}\right)$
 (OR)
 Factorize $125x^3y - 343y$
24. Find the coordinates of the point
 i) which lies on x-axis and y-axis both
 ii) whose abscissa is 6 and which lies on x-axis
25. Prove that the angles opposite to equal sides of an isosceles triangle are equal.

SECTION – C

26. Simplify : (i) $2^{\frac{2}{3}} \times 2^{-\frac{5}{3}} \times 8^{\frac{1}{3}}$ (ii) $5\sqrt{8} + 2\sqrt{32} - 2\sqrt{2}$

27. AD is an altitude of an isosceles triangle ABC in which AB = AC. Show that
 i) AD bisects BC ii) AD bisects $\angle A$

(OR)

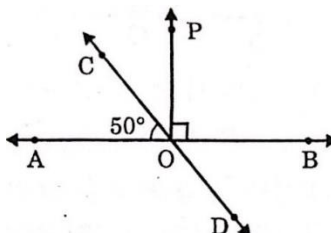
It is given that $\angle XYZ = 76^\circ$ and XY is produced to a point P. Draw a figure from the given information. If ray YR bisects $\angle ZYP$. Find $\angle XYR$ and reflex $\angle RYP$.

28. If two lines intersect each other then prove that the vertically opposite angles are equal.

29. Factorize : $2x^3 + x^2 - 13x + 6$ (OR) Factorize : $8a^3 - 27b^3 + 8c^3 + 36abc$

30. Add: $0.6 + 0.\bar{7} + 0.4\bar{7}$

31. AB and CD are two intersecting lines as shown in the figure.
 If $\angle AOC = 50^\circ$ and $\angle POB = 90^\circ$, find $\angle POC$ and $\angle POD$.

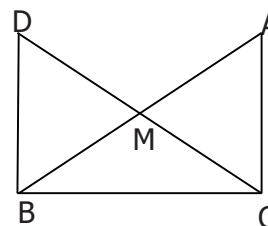


SECTION – D

32. Find the value of a and b if $\frac{7+3\sqrt{5}}{3+\sqrt{5}} - \frac{7-3\sqrt{5}}{3-\sqrt{5}} = a + \sqrt{5}b$

33. In the right $\triangle ABC$, right angled 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 B. Show that

- (i) $\triangle AMC \cong \triangle BMD$
- (ii) $\angle DBC$ is a right angle
- (iii) $\triangle DBC \cong \triangle ACB$



(OR)

State and prove ASA congruence for triangles.

34. Prove that $(a + b)^3 - (a - b)^3 - 6a^2b + 6b^3 = 8b^3$

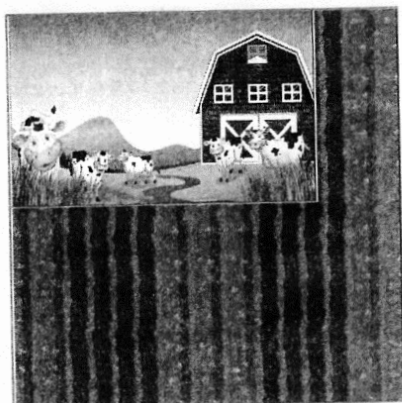
(OR)

Verify that : $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$

35. If a transversal intersects two lines such that the bisectors of a pair of corresponding angles are parallel then prove that the two lines are parallel.

SECTION – E

36. Raghav owns a square field having area $9x^2 + 12x + 4$. He fenced a rectangular region for cows in the interior of the field having area given by $x^2 + x - 2$.



Area of Rectangular field
 $x^2 + x - 2$

Entire Field Area
 $9x^2 + 12x + 4$

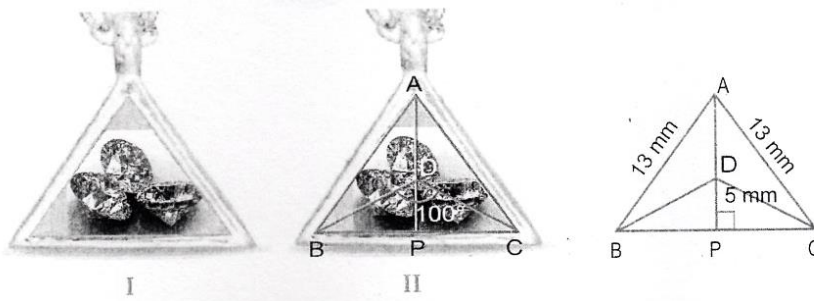
Using the above information, answer the following questions:

- i) Find the side of the square field.
- ii) If $p(x)$ and $g(x)$ represents the two polynomials respectively then find the sum of the degrees of $p(x)$ and $g(x)$.
- iii) What are the dimensions of the rectangular region?

(OR)

If $p(x) = 6x^2 + 17x + 5$ represents the rectangular region then find $p(-2)$.

37. A pendant is given a dainty dazzle look is crafted in white gold. It is triangular in shape and studded with three diamonds. The sketch originally drawn by the artist designer is shown with measurement details as $AB = AC = 13\text{mm}$, $BD = CD = 5\text{mm}$. Answer the questions :



- i) Show that $\triangle ABD \cong \triangle ACD$
- ii) Show that $\triangle ABP \cong \triangle ACP$
- iii) If $\angle BDC = 100^\circ$ then find the measure of $\angle DBC$.

(OR)

If the equal sides AB and AC of this pendant are 13 mm and its height from A to BC is 5 mm then find the length BP .

38. The autorickshaw fare in a city is charged as Rs. 10 for the first kilometer and Rs. 4 per kilometer for subsequent distance covered. The linear equation that represents the above statement is $x = \frac{y-6}{4}$ where x is the total distance covered and y is the fare charged for the journey.

- i) What amount will a person has to pay if he travels 12 km ?
- ii) How many solutions does the above linear equation can have?
- iii) Write the above equation in the form of $ax + by + c = 0$ and write the value of a , b and c .

(OR)

Find the distance travelled by a person if he has paid Rs. 202 at the end of his journey?

-X-X-X-X-X-X-