Class: 9 Half-yearly Model question - 2023-24

Marks: 90.

I) The set $P = \{x / x \in Z, -1 < x < 1\}$ is a
1) singleton set 2) power set 3) Null set 4) subset

2) Which one of the following is correct?
1) $\phi \subseteq \{a, b\}$ 2) $\phi \in \{a, b\}$ 3) $\{a\} \in \{a, b\}$ 4) $a \subseteq \{a, b\}$

3) An irrational number between 2 and 2.5 is
1) $\sqrt{11}$ 2) $\sqrt{5}$ 3) $\sqrt{2.5}$ 4) $\sqrt{8}$

4) $0.\overline{34} + 0.3\overline{4} =$
1) $0.68\overline{7}$ 2) $0.\overline{68}$ 3) $0.6\overline{8}$ 4) $0.68\overline{7}$

5) $x^{51} + 51$ is divisable by $x+1$, then the reminder is
1) 0 2) 1 3) 49 4) 50

6) Degree of the polynomial $(y^3 - 2)(y^3 + 1)$ is
1) 9 2) 2 3) 3 4) 6

7) Zeros of $(2 - 3x)$ is ____.
1) 3 2) 2 3) $2/3$ 4) $3/2$

8) The exterior angle of a triangle is equal to the sum of two
1) Exterior angle 2) Interior opposite angle
3) Alternate angle 4) Interior angle.

9) The interior angle made by the side in a Parallelogram is 90°, then the Parallelogram is a
1) rhombus 2) rectangle 3) trapezium 4) kite.

10) The mid-point ~~joining~~ of the line joining $(-a, 2b)$ and $(-3a, -4b)$ is
1) $(2a, 3b)$ 2) $(-2a, -b)$ 3) $(2a, b)$ 4) $(-2a, -3b)$

11) In what ratio does the point Q(1,6) divide the line segment joining the points P(2,7) and R(-2,3)
1) 1:2 2) 2:1 3) 1:3 4) 3:1

12) The distance between the point (5, -1) and the origin is

1) $\sqrt{24}$ 2) $\sqrt{37}$ 3) $\sqrt{26}$ 4) $\sqrt{17}$

13) The value of $72^\circ \tan 18^\circ$ is

1) 0 2) 1 3) 18° 4) 72°

14) Given that $\sin\alpha = \frac{1}{2}$ and $\cos\beta = \frac{1}{2}$ then the value of $\alpha+\beta$ is

1) 0° 2) 90° 3) 30° 4) 60°

II) Answer the following $10 \times 2 = 20$

15) If $A = \{b, d, e, g, h\}$ and $B = \{a, e, c, h\}$ then find $A \Delta B$.

16) If $n[P(A)] = 256$ then find $n(A)$

17) find the value of $\left(\frac{64}{125}\right)^{-2/3}$

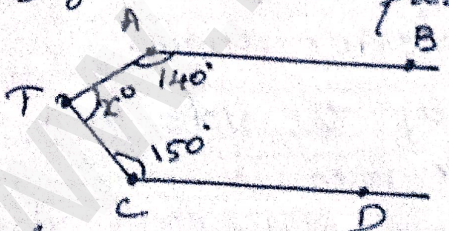
18) Give any two rational number between 0.515115111 5.... and 0.535335333 5.....

19) i) $P(x) = x^2 - 2\sqrt{2}x + 1$ then find $(2\sqrt{2})$

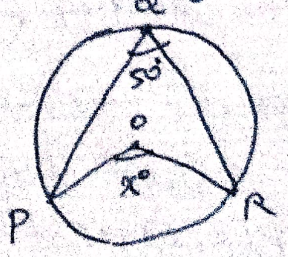
20) factorise $2x^2 + 15x - 27$

21) find the GCD of $25ab^3c$, $100a^2bc$, $125ab$

22) In the given figure AB is parallel to CD then find x°



23) find the value of given figure



24) The chord of length 30cm is drawn at the distance of 8cm from the center of the circle. Find the radius of the circle.

25) Find the mid-point of the line segment joining (a, b) and (a+2b, 2a-b)

26) Find the centroid of the triangle whose vertices are A(6, -1) B(8, 3) C(10, -5)

27) Find the value of $\tan 7^\circ \tan 23^\circ \tan 60^\circ \tan 67^\circ \tan 83^\circ$

28) if $\cos A = \frac{3}{5}$, then find the value of $\frac{\sin A - \cos A}{2 \tan A}$

(Or)

Factorise $36m^2 - 49n^2$

II) Answer the following $10 \times 5 = 50$

29) Verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ using venn diagram.

30) if $A = \{b, c, e, g, h\}$ $B = \{a, c, d, g, i\}$ and $C = \{a, d, e, g, h\}$ then show that $A - (B \cap C) = (A - B) \cup (A - C)$

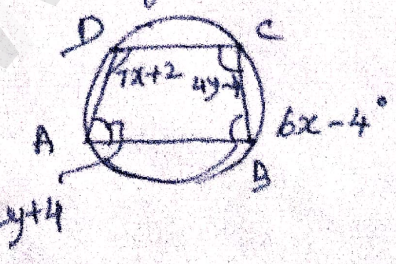
31) Represent $\sqrt{6.5}$ on a number line

32) if $x = \sqrt{5} + 2$, then find the value of $x^2 + \frac{1}{x^2}$

33) Factorise: $x^3 + 13x^2 + 32x + 20$

34) Find the value of m if $(x-2)$ is a factor of the polynomial $2x^3 - 6x^2 + mx + 4$

35) Find the all angles of the given cyclic quadrilateral ABCD in the figure



36. The angles of a quadrilateral are in the ratio 2:4:5:7. Find all the angles.

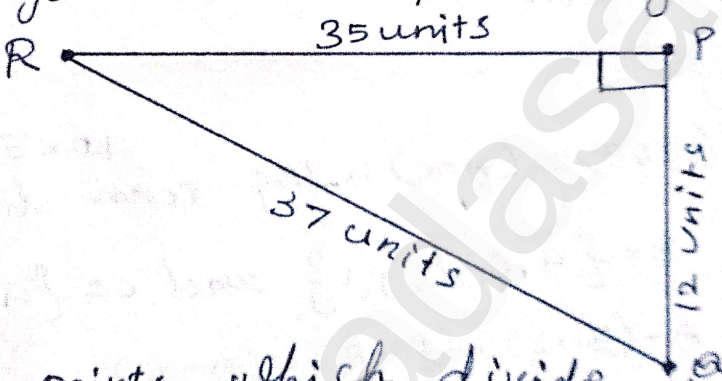
37. using Section formula Show that the point A(7,-5) B(9,-3) and (13,1) are collinear.

38) if (x,3) (6,y) (8,2) and (9,4) are the vertices of a Parallelogram taken in order, then find the value of x and y.

39) Find the value of following

$(\cos 0^\circ + \sin 45^\circ + \sin 30^\circ)(\sin 90^\circ - \cos 45^\circ + \cos 60^\circ)$

40) for the measures in the figure, compute sine, cosine, and tangent ratios of the angle θ.



41) find the points which divide a line segment joining A(-11,4) and B(9,8) into four equal parts.

42) Given $4a+3b=65$ and $a+2b=35$ Solve by elimination method

(or)

find the area of the right angle triangle with hypotenuse 5cm and one of the acute angle is $48^\circ 30'$

PART-IV

$2 \times 8 = 16$

IV.

43)

a) Draw a triangle ABC, where AB = 8cm BC = 6cm, and $\angle B = 70^\circ$ and locate it's circumcenter and draw circum circle.

(OR)

b) Construct the Centroid of $\triangle PQR$ whose sides are PQ = 8cm QR = 6cm RP = 7cm.

44) Draw the graph for the following

$y = 3x - 1$

(OR)

Use graphical method to solve the following System of equations $3x + 2y = 6$: $6x + 4y = 8$.