

C-3-Z

Roll No.....

Total No. of Questions : 20+20]

[Total No. of Printed Pages : 16

XBAKD2021
3603-Z
MATHEMATICS
(New/Old Course)

Time : 3 Hours]

[Maximum Marks : 100

NOTE :— The questions in the question paper are based on revised and pre-revised syllabus marked as “**New Course**” and “**Old Course**” respectively and candidates are advised to appear in the relevant course meant for them. Candidates who may attempt the questions partly from “**New Course**” and partly from “**Old Course**” will not be awarded. Candidates are also advised to record “**New Course**” or “**Old Course**” as the case may be, on the front page of the answer-book.

(New Course)

1. Given below are four alternatives to each. Choose correct one.

(i) One of the following is irrational number, identify :

(A) $\sqrt{225}$

(B) 3.121221222.....

(C) $3.\overline{143}$

(D) $\frac{0}{7}$

XBAKD2021—3603-Z (New)

Turn Over

C-3-Z

- (ii) The linear polynomial in 'x' whose zero is -5, is :
- (A) $x - 5$ (B) $x + 5$
 (C) $x = 5$ (D) $x = - 5$
- (iii) Next two terms in the AP $-10, -7\frac{1}{2}, \dots, \dots$ are :

- (A) $-5, -2\frac{1}{2}$ (B) $-5, \frac{1}{2}$
 (C) $5, -2\frac{1}{2}$ (D) $5, 2\frac{1}{2}$

- (iv) A pair of linear equations which has no solution is called :

- (A) Consistant pair (B) Inconsistant pair
 (C) Dependent pair (D) None of these

- (v) Which one of the following is not true ?

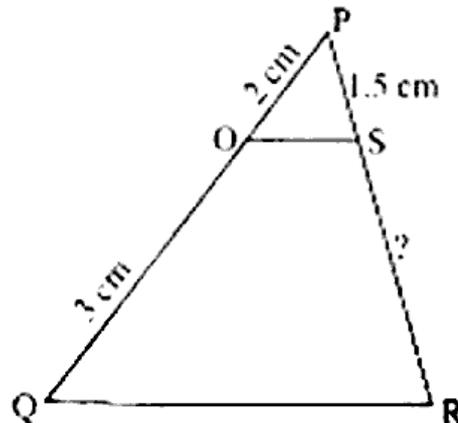
- (A) All squares are similar
 (B) All circles are similar
 (C) All triangles are similar
 (D) All rhombuses are similar

- (vi) $\cos (90 - 18) = \dots\dots\dots$

- (A) $\cos 18$ (B) $\sin 90$
 (C) $\sin 18$ (D) $\cos 90$

1x6=6

2. In the given ΔPQR , $OS \parallel QR$. Find SR .

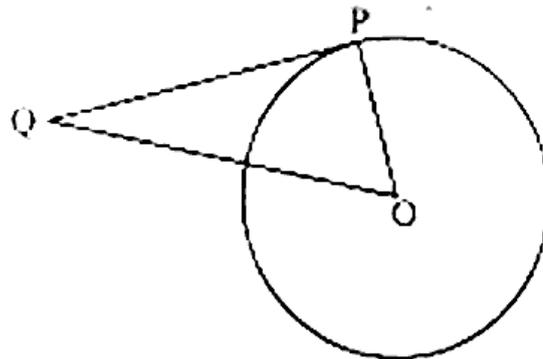


2

3. Find the distance between the points (2, 3) and (4, 1).

2

4. In the given figure, PQ is the tangent and PO the radius of the circle. If $\angle QOP = 70^\circ$, find $\angle PQQ$.



2

5. Given that :

$$\text{HCF} (306, 657) = 9, \text{ find LCM} (306, 657).$$

4

6. Check if the polynomial $p(x) = x^3 - 3$ is the factor of polynomial :

$$g(x) = 2x^4 + 3x^3 - 2x^2 - 9x - 12$$

4

7. Find the roots of $x^2 - 6x + 9 = 0$ by factorisation method.

4

8. The length of a tangent from a point 'A' at a distance of 5 cm from the centre of circle is 4 cm. Find the radius of the circle. 4
9. Find the difference between the areas of two circles whose radii are 7 cm and 3.5 cm. 4
10. A die whose six faces are marked as \boxed{A} \boxed{B} \boxed{C} \boxed{D} \boxed{E} \boxed{A} is thrown once. What is the probability of getting :
- (i) Face having \boxed{A} on it
- (ii) Face having \boxed{E} on it ? 4
11. Solve the following pair of linear equations :

$$\frac{3x}{2} - \frac{5y}{3} = -2$$

and

$$\frac{x}{3} + \frac{y}{2} = \frac{13}{6}$$

Or

Five years ago, Noori was thrice as old as Sonu. Ten years later, Noori will be twice as old as Sonu. What are their present ages? 6

12. Find two numbers whose sum is 27 and product is 182.

Or

Find the roots of the given quadratic equation by the method of completing the square :

$$2x^2 + x - 4 = 0$$

13. A sum of ₹ 700 is to be used to give seven prizes to the students of a school for their overall academic performance. If each prize is ₹ 20 less than its preceding prize. Find the value of each of the prizes.

Or

If the 3rd and 9th terms of an AP are 4 and -8 respectively, which term of this AP is zero(0) ?

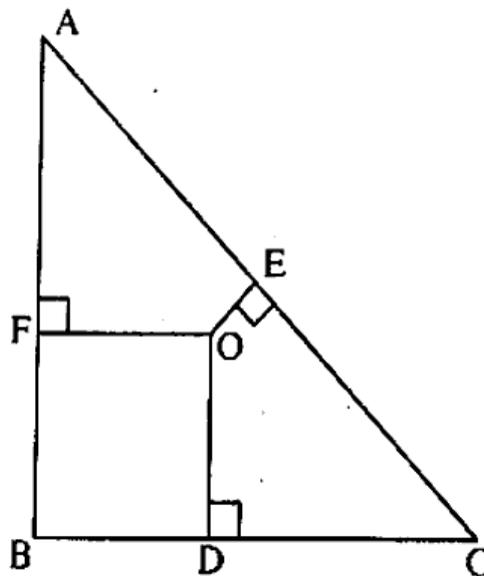
6

14. Prove that the sum of the squares of the sides of a Rhombus is equal to the sum of the squares of its diagonals.

Or

In the given figure, O is a point interior of $\triangle ABC$, $OD \perp BC$, $OE \perp AC$ and $OF \perp AB$. Show that :

$$\begin{aligned} OA^2 + OB^2 + OC^2 - OD^2 - OE^2 - OF^2 \\ = AF^2 + BD^2 + CE^2 \end{aligned}$$



6

15. Find the point on x -axis which is equidistant from $(2, -5)$ and $(-2, 9)$.

Or

Find the coordinates of a point which divide the join of $(-1, 7)$ and $(4, -3)$ internally in the ratio $2 : 3$.

6

16. Prove that :

$$(\operatorname{cosec} \theta - \cot \theta)^2 = \frac{1 - \cos \theta}{1 + \cos \theta}$$

where θ is acute angle.

Or

In ΔPQR , right angled at Q , $PR + QR = 25$ cm and $PQ = 5$ cm. Determine the value of $\sin P$, $\cos P$ and $\tan P$.

6

17. The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower is 30° . Find the height of the tower.

Or

A tree breaks due to storm and the broken part bends so that top of the tree touches the ground making an angle 30° with it. The distance between the foot of the tree to the point where the top touches the ground is 8 m. Find the height of the tree.

7

18. Draw a ΔABC in which $BC = 6$ cm, $AB = 5$ cm and $\angle ABC = 60^\circ$.

Then construct a triangle whose sides are $\frac{3}{4}$ th of corresponding sides of ΔABC .

Or

Draw a circle of radius 3 cm. From a point 5 cm away from its centre, construct a pair of tangents to the circle and find their length.

7

19. A 20 m deep well (cylindrical) with diameter 7 m is dug and the soil from the digging is evenly spread out to form a platform 22 m by 14 m. Find the height of the platform.

Or

The slant height of the frustum of a cone is 4 cm and the perimeter (circumference) of its circular ends are 18 cm and 6 cm. Find the total surface area of the frustum.

7

20. Given below is the distribution of daily wages of 50 workers of a factory. Find the mean daily wages of the workers :

Daily Wages (in ₹)	500-520	520-540	540-560	560-580	580-600
Number of Workers	12	14	8	6	10

Or

The given distribution shows the runs scored by some top batsmen of the world in one-day international cricket matches. Find the mode of the data :

Runs Scored	No. of Batsmen
3000—4000	4
4000—5000	18
5000—6000	9
6000—7000	7
7000—8000	6
8000—9000	3
9000—10000	1
10000—11000	1