

G-3-Y

Roll No.....

Total No. of Questions : 20]

[Total No. of Printed Pages : 8 + Graph

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MATHEMATICS

Time : 3 Hours]

[Maximum Marks : 100

1. Choose the correct answer :

(i) Which of the following pattern of number are in A.P. ?

(a) 31, 27, 23, 18,

(b) -3, -6, -9, -12,

(c) 2, 7, 9, 11, 13

(d) 2, 4, 6, 10, 16, 24,

(ii) A linear equation in two variable represent a :

(a) Point

(b) Circle

(c) Line

(d) None of these

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(iii) Volume of sphere is :

(a) $\frac{3}{4}\pi r^3$

(b) $\frac{2}{3}\pi r^2$

✓ (c) $\frac{4}{3}\pi r^3$

(d) $\frac{2}{3}\pi r^3$

(iv) A line intersecting a circle in two points is called

(v) Probability of an impossible event is

(vi) Zero of the quadratic polynomial $x^2 - 2x - 8$ is :

✓ (a) -2 and 4

(b) 2 and 4

(c) 2 and -4

(d) -2 and -4

1×6=6

2. Find the distance between the points (0, 0) and (36, 15).

2

3. Evaluate :

$$\frac{\tan 26^\circ}{\cot 64^\circ}$$

2

1. In figure given $AP = 4$ cm, $PB = 3$ cm and $CP = 6$ cm. Then find PD .



5. Find the L.C.M. of 12, 15 and 21 by factorization method. 2
6. The sum of 1st n th term of an A.P. is given by $S_n = 3n^2 - 4n$.
Determine 12th term of an A.P. 4

7. Solve the equation by Elimination method :

$$2x - 3y = 4$$

$$x + y = 5$$

8. Find the zero of quadratic polynomial and verify relationship between zero and co-efficient of :

$$x^2 - 2x - 8$$

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9. The sum of the digits of two number is 9. Also nine times this number is twice the number obtained by reversing the order of digits. Find the number. 4

10. One card is drawn from a well suffled deck of 52 cards. Find the probability of getting :

(i) the jack of hearts

(ii) the queen of diamond 4

11. The sum of the reciprocals of Rehman's ages (in years) 3 years ago and 5 years from new is $\frac{1}{3}$. Find the present age.

Or

Find the roots of the quadratic equation by the method of completing the square $2x^2 + x - 4 = 0$. 6

12. The altitude of a right triangle is 7 cm less than its base. If the hypotenuse is 13 cm, find other two sides.

(5)

Or

Find the roots of the following equation :

$$\frac{1}{x} - \frac{1}{x-2} = 3 \quad x \neq 0, 2$$

6

13. Prove that the ratio of the area of two similar triangle is equal to the square of the ratio of their corresponding medians.

Or

ABCD is a trapezium in which $AB \parallel DC$ and its diagonal intersect each other at the point O. Show that :

$$\frac{AO}{BO} = \frac{CO}{DO}$$

6

14. D and E are points on the sides CA and CB respectively of a triangle ABC right angles at C. Prove that :

$$AE^2 + BD^2 = AB^2 + DE^2$$

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(6)

Or

ABCD is a trapezium with $AB \parallel DC$. E and F are points on non-parallel sides AD and BC respectively such that EF is parallel of AB.

Show that :

$$\frac{AE}{ED} = \frac{BF}{FC}$$

6

15. If A and B are $(-2, -2)$ and $(2, -4)$ respectively, find the co-ordinates of P such that $AP = \frac{3}{7}AB$, and P lies on the line segment AB.

Or

Find the area of quadrilateral whose vertices taken in order are $(-4, -2)$, $(-3, -5)$, $(3, -2)$ and $(2, 3)$.

6

16. Evaluate :

$$\frac{5\cos^2 60 + 4\sec^2 30 - \tan^2 45}{\sin^2 30 + \cos^2 30}$$

Or

Prove :

$$\frac{\sin \theta - 2\sin^3 \theta}{2\cos^3 \theta - \cos \theta} = \tan \theta$$

6

17. The length of a tangent from a point A at distance 5 cm from the centre of a circle is 4 cm. Find the radius of circle.

Or

18. Prove that the tangents drawn at the ends of a diameter of a circle are parallel.

7

18. Draw a pair of tangent to a circle of radius 5 cm which are inclined to each other at an angle of 60° . Write steps.

Or

Draw a triangle ABC with side $BC = 7$ cm, $\angle B = 45^\circ$, $\angle A = 105^\circ$.

Then construct a triangle whose sides are $\frac{4}{3}$ times the corresponding sides of $\triangle ABC$. <https://www.jkboseonline.com>

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19. The angle of depression of the top and the bottom of an 8 m tall building from the top of a multistoreyed building are 30° and 45° respectively. Find the height of the multistoreyed building and the distance between the two buildings.

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Or

From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 45° . Find the height of tower. 7

20. How many silver coins, 1.75 cm in diameter and of thickness 2 mm must be melted to form a cuboid of dimensions 5.5 cm \times 10 cm \times 3.5 cm ?

Or

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