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DPM CLASSES

6th to 10th (Math's & Science), 11th & 12th (Physics, Chemistry, Math's)

EXAM - PAPER (CBSE/NCERT)

PRACTICE SET -1

SESSION -2024-25

CLASS - 10th

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Add: Block -B, Near Glory Villa, 60 feet Road (Nearest land mark Scindia Statue), Shatabdipuram, Gwalior

Time : 3:00 hr Exam paper - 1 (Maths) mm:

Q. 1. Choose the correct option and write it:

(i) When $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$, then the system of equation $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$

(a) has unique solution (b) has no solution
(c) has two solutions (d) has infinity many solutions

(ii) 10^{th} term of the AP : 10, 7, 4, ... is

(a) 14 (b) 17
(c) -14 (d) -17

(iii) If α and β are the zeroes of the quadratic polynomial $ax^2 + bx + c$ then the value of $\alpha + \beta$ is:

(a) $\frac{-b}{a}$ (b) $\frac{b}{a}$
(c) $\frac{a}{b}$ (d) $\frac{-a}{b}$

(iv) If tangents PA and PB from a point P to a circle with centre O are inclined to each other at angle of 80°, then $\angle POA$ is equal to:

(a) 50° (b) 60°
(c) 70° (d) 80°

1.

(v) ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Ratio of the areas of triangles ABC and BDE is:

(a) 2:1 (b) 1:2
(c) 4:1 (d) 1:4

Q.2. Fill in the blanks :-

(i) Formula of volume of cylinder is .....

(ii) The sum of the probabilities of all the elementry events of an experiment is .....

(iii) there is an empirical relationship between the measures of central tendency:

3 median = mode + ...

(iv) Formula of area of the circle of radius r is.....

(v) A tangent to a circle intersects it in ..... point.

Q.3. Write true/False in the following:

(i) The Cumulative frequency of a class is the frequency obtained by adding the frequencies of all the classes preceding the given class.

(ii) circumference of circle of radius $r = 2\pi r$.

(iii) Any polynomial of degree 2 can have at most two zeroes.

(iv) The distance of a point from the y-axis is called its y-coordinate.

(v) $\sqrt{2}$ is rational number.

Q.4. match the columns:

(i) $\operatorname{cosec}(90-\theta)$	(a) 0
(ii) $\sqrt{\sec^2\theta - \tan^2\theta}$	(b) $\frac{1}{\sqrt{2}}$
(iii) $\sin 0^\circ$	(c) $\sec\theta$
(iv) $\tan\theta$	(d) 1
(v) $\cos 45^\circ$	(e) $\frac{\sin\theta}{\cos\theta}$

Q.5. Write the answer in one word/sentence of each:

(i) Write definition of the line of sight.

(ii) Write the standard form of a linear equation of two variables x and y.

(iii) Write the general form of arithmetic progression.

(iv) Write the general formula of the discriminant of the quadratic equation $ax^2+bx+c=0$.

(v) Is $(x+1)^2=2(x-3)$ a quadratic equation?

Q.6. Find the HCF of 12, 15, 21 using the prime factorisation method.

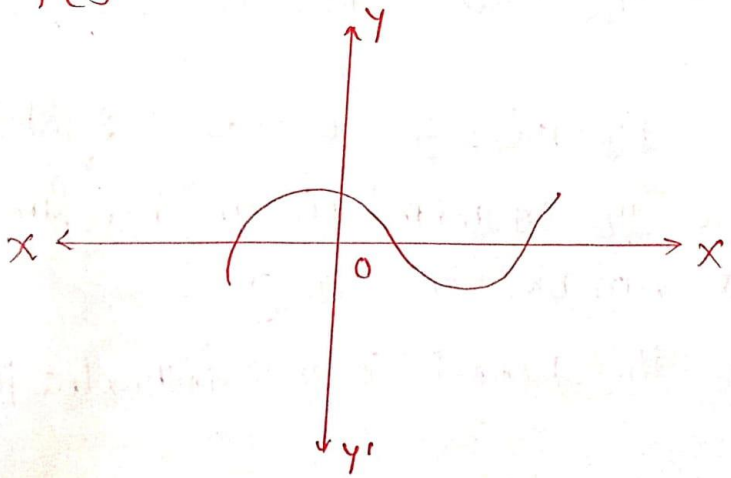
or

Without actually performing the long division; state whether the rational number $\frac{35}{50}$ will have a terminating decimal expansion or a non-terminating repeating decimal expansion.

Q.7. Find the zeroes of the polynomial x^2-3

or

The graphs of $y=p(x)$ are given in figure below for some polynomials $p(x)$. Find the number of zeroes of $p(x)$.



Q.8. Find the distance between the points (0,0) and (36,15)

OR

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

Q.9. A lot of 20 bulbs contains 4 defective ones. one bulb is drawn at random from the lot. What is the probability that this bulb is defective?

OR

A die is thrown once. Find the probability of getting an odd number.

Q.10. Harpreet tosses two different coins simultaneously what is the probability that she gets at least one head ?

OR

one card is drawn from a well-shuffled deck of 52 cards. Find the probability of getting a face card.

Q.11 If $\sin A = \frac{3}{4}$, Calculate $\cos A$ and $\tan A$

OR

If $\tan A = \cot B$, prove that $A + B = 90°$

Q.12. Find the coordinates of a point A, where AB is the diameter of a circle whose centre is (2,-3) and B is (1,4).

or

Find the value of K if the points A(8,1), B(K,-4) and C(2,-5) are collinear.

Q.13. A tangent PQ at a point P of a circle of radius 5 cm meets a line through the centre O at a point Q such that OQ = 12 cm. Find the length of PQ.

or

Prove that the lengths of tangents drawn from an external point to a circle are equal.

Q.14. The radii of two circles are 19 cm and 9 cm respectively. Find the radius of the circle which has circumference equal to the sum of the circumference of the two circles.

Or

A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the area of the corresponding minor segment.

Q.15. Prove that $\sqrt{5}$ is irrational number.

or

Use Euclid's division algorithm to find the HCF of 135 and 225.

Q.16. Find the zeroes of the quadratic polynomial x^2-2x-8 and verify the relationship between the zeroes and the coefficients

or

Obtain all other zeroes of $3x^4+6x^3-2x^2-10x-5$, if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$

Q.17. For which value of k will the following pair of linear equations have no solution ?

$$3x+y = 1$$
$$(2k-1)x+(k-1)y = 2k+1$$

or

The larger of two supplementary angles exceeds the smaller by 18°. Find them.

Q.18. The first term of an AP is 5. The last term is 45 and the sum is 400. Find the number of terms and the common difference.

or

How many multiples of 4 lie between 10 and 250?

Q.19. An observer 1.5 m tall is 28.5 m away from a chimney. The angle of elevation of the top of the chimney from her eyes is 45°. What is the height of the chimney?

or

A circus artist is climbing a 20 m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole, if the angle made by the rope with the ground level is 30°.

Q.20. A vertical pole of length 6 m casts shadow 4 m long on the ground and at the same time a tower casts a shadow 28 m long. Find the height of the tower

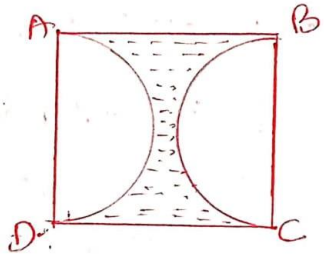
or

ABC is an equilateral triangle of side 2a. Find each of its altitudes.

Q.21. An umbrella has 8 ribs which are equally spaced. Assumbing umbrella to be a flat circle of radius 45 cm. find the area between the two consecutive ribs of the umbrella.

or

Find the area of the shaded region in given figure if ABCD is a square of side 14 cm and APD and BPC are semicircles.



Q.22. Find the values of K for the following quadratic equation, so that they have two equal roots:

$$2x^2 + Kx + 3 = 0$$

or

Find the roots of the following equations:

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

Q.23 Prove that : $\frac{\cos A}{1+\sin A} + \frac{1+\sin A}{\cos A} = 2\sec A$

or.

If A, B and C are interior angles of a triangle ABC, then show that :

$$\sin\left(\frac{B+C}{2}\right) = \cos\frac{A}{2}$$

Q.24. Draw a circle of radius 3cm. Take two point P and Q on one of its extended diameter each at a distance of 7 cm from its centre. Draw tangents to the circle from these two points P and Q

or

Construct a triangle with sides 5cm, 6cm and 7cm and then another triangle whose sides are $\frac{7}{5}$ of the corresponding sides of the first triangle. Also write the step of construction.

Q. 25. A cone of height 24 cm and radius of base 6 cm is made up of modelling clay. A child reshapes it in the form of a sphere. Find the radius of the sphere.

Or

A medicine capsule is in the shape of a cylinder with two hemispheres stuck to each of its ends. the length of the entire capsule's is 14 mm and the diameter of the capsule is 5 mm. Find its surface area.

Q. 26. Consider the following distribution of daily wages of 50 workers of a factory:

Daily wages	500-520	520-540	540-560	560-580	580-600
No. of workers	12	14	8	6	10

Find the mean daily wages of the workers of the factory.

Or

The following table shows the ages of the patients admitted in a hospital during a year:

Age	5-15	15-25	25-35	35-45	45-55	55-65
No. of patients	6	11	21	23	14	5

Find the mode of the data given above.

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