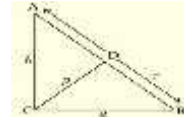


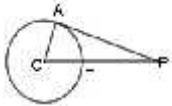
I. Four alternatives are given to each question. Choose appropriate answer. Write it along with its alphabet. 1x8=8

- 1) Two APs have the same common difference. The first term of one of these is -1 and that of the other is -8. Then the difference between their 4th terms is
 A) -1 B) -8 C) 7 D) -9
- 2) In a right triangle ABC in which $\angle C = 90^\circ$ and $CD \perp AB$. If $BC = a$, $CA = b$, $AB = c$, $CD = p$ then,



A) $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$ B) $\frac{1}{p^2} \neq \frac{1}{a^2} + \frac{1}{b^2}$ C) $\frac{1}{p^2} > \frac{1}{a^2} + \frac{1}{b^2}$ D) $\frac{1}{p^2} < \frac{1}{a^2} + \frac{1}{b^2}$

- 3) AP is a tangent to a circle with center O. $AP = 12\text{cm}$, $TP = 8\text{cm}$. The radius of the circle is.....



- A) 5cm B) 12cm C) 13cm D) 20cm

- 4) The circumferences of two circles are in the ratio 2:3. The ratio of their area is.....

- A) 4: 9 B) 2:3 C) 7:9 D) 4:10

- 5) Let $x = \frac{7}{22 \times 53}$ be rational number. Then x has decimal expansion which terminates :

- A) After four places of decimal B) After three places of decimal
 C) After five places of decimal D) After two places of decimal

- 6) The number of zeroes, the polynomial $P(x) = (x-2)^2 + 4$ can have , is

- A) 0 B) 1 C) 2 D) 3

- 7) If $P(x) = 2x^2 + 3x + 1$ is divisible by $g(x) = x + 2$, then remainder is:

- A) 1 B) 3 C) 4 D) 5

- 8) A letter of English alphabets is chosen at random. probability that it is a letter of the word 'MATHEMATICS' is

- A) $\frac{11}{26}$ B) $\frac{5}{13}$ C) $\frac{9}{26}$ D) $\frac{4}{13}$

II. Answer the following

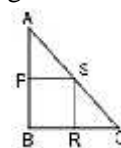
1X6=6

- 9) If sum of the n terms of an A.P is given by $S_n = 3n - 2n^2$ find common difference of the A.P.
- 10) State basic proportionality theorem.
- 11) AOBC is a rectangle whose three vertices are A(0,3), O(0,0) and B(5,0). Find length of its diagonal.
- 12) If H.C.F of 65 and 117 is expressible in the form $65m - 117$, then find the value of m.
- 13) If $px^2 + 3x + q = 0$ has two roots $x = -1$ and $x = -2$, then find the value of q-p.
- 14) Write the formula to find the quantity of milk to be filled in the cylindrical vessel.

III. Answer the following

2X16=32

- 15) Sides other than the hypotenuse of a right triangle are of lengths 16cm and 8cm. find the length of the side



of the largest square that can be inscribed in the triangle as shown in the figure.

- 16) Find the value of p if the lines represented by the equations $3x - y = 5$ and $6x - 2y = p$ are parallel.

17) One of the angles of a triangle is 40° . The difference between other two angles is 30° . Find these angles.

OR

The perimeter of the rectangle is 158 cm. If the length is 7 more than 3 times the width, find the area of the rectangle.

18) Construct a tangent of length 4cm to a circle of radius 3cm from an external point.

19) If the center of the circle is (-3,2) and one end of the diameter is (4,-7). Find the other end.

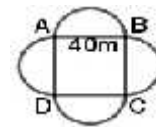
20) Prove that $\sqrt{5} + \sqrt{3}$ is irrational

21) If $p-2$ is a factor of $p^3+ap^2+bp+16$ and $b=4a$, then find the values of a and b .

22) The length of a line segment is 10units. If one end is (2,-3) and the abscissa of the other end is 10, and then find its ordinate.

23) Prove that $\frac{1+\cos A}{1-\cos A} = (\operatorname{cosec} A + \cot A)^2$

24) The square water tank has its sides equal to 40m. There are four semi-circular grassy plots all round it. Find the cost of surfing the plots at Rs 1.25 per m^2 .



25) Find lesser root of the equation using formula : $\frac{3x}{5} = \frac{x^2+8}{10}$

26) Find the value of 'q' so that the polynomial $2x^2-3qx+5q$ has one zero which is twice the other.

OR

$\sqrt{\quad}$

Find zeroes of a polynomial $f(x) = 4\sqrt{3}x^2 - 2\sqrt{3}x - 2\sqrt{3}$ and verify relationship between multiplication of zeroes and coefficients.

27) The outcome of a random experiment is either success or failure. If the probability of success is thrice the probability of failure, find the probability of success.

28) From the top of the cliff 40m high, the angles of depression of two objects on the ground due west of the cliff are 45° and 30° . Find the distance between the objects.

29) A glass cylinder with diameter 20cm has water to a height of 9cm. A metal cube of 8cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder.

30) A man wants to determine the height of a light house. He measured the angle at A and found that $\tan A = \frac{3}{4}$. What is the height of the light house if A is 40 m from the base?

III. Answer the following

3X6=18

31) Draw an isosceles $\triangle ABC$, in which $AB = AC = 5.6$ cm and $\angle ABC = 60^\circ$. Draw another $\triangle AB'C'$ similar to $\triangle ABC$ such that $AB' = \frac{2}{3}$

32) Prove that $(1+\tan B)^2 + (1+\cot B)^2 = (\sec B + \operatorname{cosec} B)^2$ OR Prove that $\frac{1+\sin A}{1-\sin A} - \frac{1-\sin A}{1+\sin A} = 4 \sec A \tan A$

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

OR

Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact.

34) A survey regarding the heights (in cm) of 60 girls of a school was conducted and the following data was obtained. Find the median height

Height (in cm)	Number of girls
Less than 140	4
Less than 145	11
Less than 150	29
Less than 155	40
Less than 160	46
Less than 165	60

OR

The following data gives the information on the observed lifetimes (in hours) of 225 electrical components. Determine the modal lifetimes of the components.

Lifetimes (in hours)	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120
Frequency	10	35	52	61	38	29

35) The following distribution gives the daily income of 50 workers of a factory. Convert the distribution above to a less than type cumulative frequency distribution, and draw its ogive.

Daily income(inRs)	100-120	120-140	140-160	160-180	180-200
No of workers	12	14	8	6	10

36) A ball is thrown upwards from a rooftop, 80m above the ground. It will reach a maximum vertical height and then fall back to the ground. The height of the ball from the ground at time t is h , which is given by, $h = -16t^2 + 64t + 80$.

1. What is the height reached by the ball after 1 second?
2. What is the maximum height reached by the ball?
3. How long will it take before hitting the ground?

OR

Two cyclists move away from a town along two perpendicular paths at 20 km/h and 40 km/h respectively. The second cyclist starts the journey an hour later than the first one. Find the time taken for them to be 100 kms apart.

IV Answer the following

4X4=16

37) State and prove Pythagoras theorem

38) Solve graphically $x+3y=6$
 $2x-3y=12$

39) An A.P. consists of 12 terms. The sum of two middle terms is 54 and the sum of last three terms is 135.

Find A.P

OR

In an A.P the 15th term is 12 and the sum of the first 11 terms is $82\frac{1}{2}$ Find A.P

40) Water flows through a cylindrical pipe. Whose inner radius is 1cm, at the rate of 80cm/sec in an empty cylindrical tank, the radius of whose base is 40cm. What is the rise of water level in tank in half an hour?