10 th CLASS

MATHEMATICS

PAPER - II   **PART – A & B**

MODEL PAPER - 3

Time 2.30 Hours

Max Marks: 50

Instructions: 1) Answer the questions under Part-A on a separate answer book

2) Write the answer to the Questions under Part-B on the question paper itself & attach it to the answer book of Part-A

Time: 2 Hours   **PART – A**   **Marks: 35**

SECTION – I   **5x2=10**

Note: 1) Answer any 5 questions choosing at least 2 from each of the following two groups A & B

2) Each question carries 2 Marks.

GROUP – A

(Similar Triangles, Tangents and Secants to a Circle, Mensuration)

1. A person 1.65 m tall casts 1.8 m shadow. At the same instance, a lamp – posts casts a shadow of 5.4 m. Find the height of the lamppost.
2. Two concentric circles are radii 5 cm. and 3cm. are down. Find the length of the chord of the larger circle which touches the smaller circle.
3. A Sphere , a Cylinder and a Cone have the same radius. Find the ratio of their curved surface areas.
4. Metallic Spheres of radius 6cm, 8cm and 10cm respectively are melted to form a single solid Sphere. Find the radius of the resulting Sphere.

GROUP – B

(Trigonometry, Applications of Trigonometry, Probability, Statistics)

5. Show that $\cot \theta + \tan \theta = \sec \theta \cdot \csc \theta$
6. A contractor wants to set up a slide for the children to play in the park. He wants to set it up at the height of 2m and by making an angle of 30^0 with the ground. What should be the length of the slide?
7. A bag contains 3 red balls and 5 black balls. A ball is drawn at random from the bag . What is the probability that the ball drawn is   i) red?   ii) not red?
8. The distribution below gives the weights of 30 students of a class. Find the Median weight of the students.

Weight(kg)	40 – 45	45 – 50	50 – 55	55 – 60	60 – 65	65 – 70	70 - 75
Number of Students	2	3	8	6	6	3	2

SEXTION –II   **4x1 = 4**

Note: 1) Answer any four of the following questions.

2) Each question carries 1 Mark.

9. Write SAS Axiom

10. Find the volume of a Sphere of radius 2.1 cm ($\pi = \frac{22}{7}$)

11. Evaluate $\frac{\sec 35}{\csc 55}$

12. If p(E) = 0.05 What is the Probability of not E.

13. Find the mode of the following data 1, 1, 2, 2, 2, 3, 4, 4, 5, 5, …………

14. Draw a circle and two lines are parallel to a given line such that one is a tangent and the other is a secant to the Circle.

**SECTION - III**   **4x4=16**

Note 1. Answer any 4 questions choosing at least 2 from each of the following two groups A & B

2. Each question carries 4 Marks.

GROUP – A

(Similar Triangles, Tangents and Secants to a Circle, Mensuration)

15. State and prove Pythagoras theorem.

16. If a circle touches all the four sides of a quadrilateral ABCD at points PQRS. Then AB+CD = BC+DA can you think how do we proceed? AB, CD, BC, DA are all chords to a Circle.
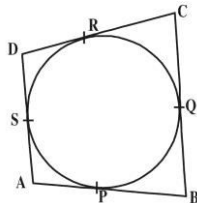
For the circle to touched all the four sides of the quadrilateral at points P, Q, R, S it has to be inside the quadrilateral (see figure) How do we proceed further ?

17. How many Silver Coins 1.75 cm. in a diameter and thickness 2mm, need to be melted to form a cuboid of dimensions 5.5 cm x 10 cm x 3.5 cm ?

18. The diameter of a metallic Sphere is 6 cm. It is melted and drawn into a wire having diameter of the cross section as 0.2 cm. Find the length of the wire.

GROUP – B

(Trigonometry, Applications of Trigonometry, Probability, Statistics)

19. Show that $\sqrt{\frac{1+\sin A}{1-\sin A}}$ = sec A + tan A

20. From the top of a building the angle of elevation of the top of a cell tower is 60^0 and the angle of depression to is foot is 45^0. If distance of the building from the tower is 7m. Then find the height of the tower.

21. A box contains 5 red marbles, 8 white marbles and 4 green marbles. One marble is taken out of the box at random. What is the probability that the marble taken out will be
i) red?   ii) white?   iii) not green ?

22. The Median of the following data is 525. Find the value of x and y, if the total frequency is 100. (Here CI stands for class interval and Fr for frequency.)

CI	0 - 100	100 - 200	200 - 300	300 – 400	400 – 500	500 – 600	600 – 700	700 – 800	800 – 900	900 - 1000
Fr	2	5	X	12	17	20	Y	9	7	4

SECTION – IV   **1x5=5**

Note: 1) Answer one question from the following.
2) Each question carries 5 Marks.
(Similar Triangles, Applications of Trigonometry)

23. Construct a triangle shadow similar to the given Δ ABC, with its sides equal to $\frac{5}{3}$ of the corresponding sides of the triangle ABC.

24. A 1.5 meters tall boy is looking at the top of a temple which is 30 meter in height from a point at certain distance. The angle of elevation from his eye to the top of the crown of the temple in creases from 30^0 to 60^0 as he walks towards the temple. Find the distance he walked towards the temple.

PART - B

Time: 30 Minutes	Model Paper - 3	Marks: 15

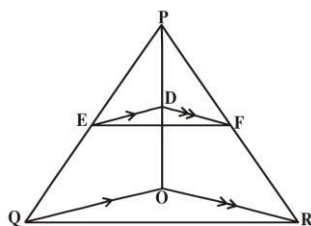**I.** Write the capital letter showing the correct answer for the following questions in the brackets provided against them.   **10 x $\frac{1}{2}$ = 5**

1. The diagonal of a quadrilateral ABCD intersect each other at 'O'.   [   ]
such that $\frac{AO}{BO} = \frac{CO}{DO}$ then ABCD is a
     A. Trapezium   B. Parallelogram   C. Rhombus   D. Square

2.

In the above figure DE//OQ and DF// OR, then ..   [   ]

     A. ED//RQ   B. OR// ED   C. EF//QR   D. QR//ED

3. The ration of the areas of two similar triangles is 9:16 then the ratio   [   ]
of the corresponding sides
     A. 4:3   B. 4:5   C. 3;4   D. 3:5

4. D, E, F are mid points of BC, CA, AB of Δ ABC ; Area of Δ ABC is 28 sq.m. [   ]
their area of Δ DEF is
     A. 14 cm^2 B. 28 cm^2 C. 56 cm^2 D. 7cm^2

5. If a area of base of cylinder is 616 cm^2 and C.S.A is 1848 cm^2 then   [   ]
T.S.A of cylinder is…
     A. 2564 cm^2 B. 3080 cm^2 C. 18480 cm^2 D. 25640 cm^2

6. In slant height of cone l=6.5 cm, height h = 6 cm then its base radius is   [   ]
     A. 12.5 cm2   B. 7.25 cm   C. 6.25 cm   D. 0.5 cm

7. In Δ PQR ∠Q = 90⁰ if Q = 7cm; QR = 25cm the tanQ – tan R =   [   ]

    A. $\frac{168}{527}$ B. $\frac{527}{168}$ C. $\frac{472}{628}$ D. $\frac{249}{164}$

8. $\frac{2\,tan\,30^0}{1-tan^2\,30^0}$ =   [   ]

    A. cos 60⁰   B. sin 60⁰   C. tan 60⁰   D. sin30⁰

9. From table probability that a student have blood group 'B'   [   ]

Blood group	A	AB	B	0
No. of students	10	13	12	15

    A. 0.8   B. 0.6   C. $\frac{13}{40}$ D. 0.24

10. In a class lower limit is 35 Mid value of the class is 50 then upper limit is   [   ]

    A. 65   B. 70   C. 75   D. 85

II. Fill in the blanks with suitable answers   **10 x $\frac{1}{2}$ = 5**

11. 'O' is center of circle of radius 6cm. from a point 'p', 10cm away from center.[   ]
two tangents PA, PB are drawn then AP = ……………………………cm

12. Total surface area of hemisphere whose radius is 2cm. …………………………

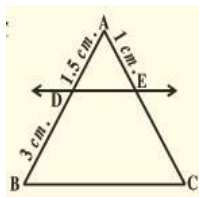13. Two cubes each of volume 64 cm^3 are joined end to end together, then total surface area of resulting cuboid is …………………………

14. If 3 tan A = 4 then sin A =……………………………

15. Mode of first five natural numbers is …………………………

16. If tan5A = cot(A-6⁰) then A= …………………………

17. $\sqrt{\frac{1+cos\,A}{1-cosA}}$ = …………………………

18. In the beside picture DE//BC. Then EC is …………………..

19. The Right circle cone volume formula is …………………………….
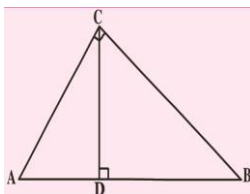
20 . In Δ ACB ∠C = 90⁰ and CD ⊥ AB then $\frac{BC^2}{AC^2}$ = ………………

III. For the following questions under Group-A choose the correct answer from the master list Group-B and write the letter of the correct answer in the brackets provided against each item $\qquad$ **10 x $\frac{1}{2}$ = 5**

A. **GROUP-A**			**GROUP – B**
21. $\sin 75^0 + \cos 65^0 =$	[	]	A. $\sqrt{2}$
22. $(\sin A + \cos A)^2 + (\cos A + \sec A)^2 =$	[	]	B. L.S.A + 2xArea of base
23. $\text{cosec } 45^0 =$	[	]	C. $\cos 35^0 + \sin 15^0$
24. T.S.A of right prism	[	]	D. $7 + \tan^2 A + \cot^2 A$
25. T.S.A of right pyramid	[	]	E. $\cos 15^0 + \sin 35^0$
			F. L.S.A + Area of base
			G. $\frac{2}{3} \pi r^3$
			H. $\frac{1}{\sqrt{2}}$

B. **GROUP-A**			**GROUP – B**
26. Length of class of $0.00 – 0.04, 0.05 – 0.08, 0.08 – 0.12$ is …….	[	]	I. 0.02
27. If a event is 'E' and probability of 'E' is p(E) If $p(\overline{E}) = 0.98$ then p(E) =	[	]	J. 509.2 cm^2
28. If a quadrilateral is selected. what is the probability that its diagonals are equal	[	]	K. 0.04
29. If side of an equilateral triangle is $\sqrt{3}$ units. then its attitude length is……..	[	]	L. 0.01
30. Area of regular hexagon whose radius 14 cm	[	]	M. 0.4
			N. 1.5
			O. 106.79 cm^2
			P. 0.1