MATHEMATICS: PAPER - II

Time: 2.45 Hrs. **Marks: 40**

PARTS - A & B

Instructions:

1. Read All questions
2. Part A answer should be written in Separate Answer Book.
3. There are three sections in Part A.
4. Answer all quesions.
5. Every Answer Should be written Vesibility and neatly.
6. There is internal choice in section - III.

PART - A

Time: 2.15 Hrs. **Marks: 30**

SECTION - I

4x1=4 M

Note: 1. Answer all questions
2. Each quetions carries 1 Mark.

1. Mention the Coordinate axis on which the points (0,6), (0, -2), (0, $\sqrt{2}$) lie and comment.
2. A circus artist is climbing a 20m long rope which is tightly stretched and tied the top of a vertical poletothe ground. Find the height of the people if the angle made by the rope with the ground level is 30^0.
3. A lot consists of 144 ball pens of which 20 are detective and the others are good. The shopkeeper draws one pen at random and gives it to Ramu. What is the probability that she will bay it?
4. A line through the centre 'O' of a circle of radius 7cm cuts the tangent, at a point 'P' on the circle, at Q such that PQ=24cm. Find OQ.

SECITON - II

5x2=10M

Note: 1. Answer all questions.
2. Each quesion Carries 2 marks.

5. When do we say two triangles are similar?
6. The hypotenuse of a right triangle is 6m more than twice the shortest side. If the third side is 2m less then the hypotenuse, find the sides of the triangle.
7. Show that $(1-\text{Sin}\,\theta)\,(1+\sin\theta)\,(1+\tan^2\theta)=1$
8. The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the median of the data.

Monthly Consumption	65-85	85-105	105-125	125-145	145-165	165-185	185-205
No.of consumers	4	5	13	20	14	8	4

9. An unbiased die is thrown. What is the probability of getting.
i) An even number? ii) A multiple of 3?

SECITON - III

4x4=16M

Note: 1. Answer all questions:
2. Choose any one from each quesion. Each quesion carries 4 Marks.

10(a). ABC is a right triangle right angled at C. Let BC=a, CA=b, AB=c and Let P bet the length of perpendicular from 'C' on AB. Prove that.

i) PC = ab ii) $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$

(or)

10(b). If D, E and F are the mid points of sides BC, CA and AB respectively of a ΔABC, then using coordinate geometry prove that area of $\Delta DEF = \frac{1}{4}(Area\ of\ \Delta ABC)$

11(a). ABC is a right triangle right angled at C. If A=30^0 and AB=40 units, find the remaining two sides and $\angle B$ of ΔABC

(or)

11(b). 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 its foot is 45^0. If distanceof the building from the tower is 7m, then find the height of the tower.

12(a). A bag contains 6 yellow balls and some green balls. The probability of getting a gree ball is triple that of a yellow ball. Determine number of Green balls in the bag and find the probability of ech colour ball when a ball is drawn at time randomly.

(or)

12(b). If A and B are (-2, -2) and (2, -4) respectively. Find the coordinates of a P such that $AP = \frac{3}{7}$ AB and P lies on the segment AB.

13(a). The following distribution gives the daily income of 50 work sheet of a factory.

Daily income	250-300	300-350	350-400	400-450	450-500
(in Rupees)	12	14	8	6	10

Convert distribution above to a less than type cumulative frequency distribution and draw its ogive.

(or)

13(b). Construct a triangle of sides 4cm, 5cm and 6cm. Then construct a triangle similar to it, whose sides are $\frac{2}{3}$ of the corresponding sides of the first triangle.

PARTS - B

Time: 30 Min **Marks:10**

Instructions:

1. Answer all the question in Part-B
2. Each question has 4 options. Write the capital letter in indicating the answer in the given brackets.
3. Marks are not awarded for over writing answer.
4. All questions carry equal marks.

Note: 1. Answer all the questions in Part-B.
2. Each Question carries 1/2 Mark.

SECITON - IV

20x1/2=10M

14. The ratio that the X-axis divides the line joining the points (1,7) and (2,-3) is ( )
a) 1:2 b) 3:5 c) 3:7 d) 7:3

15. If the perimeters of two similar triangles are 30 cm and 20 cm and one side of the first triangle is 12 cm then its corresponding side of the second triangles is ( )
a) 6 cm b) 8 cm c) 12 cm d) 18 cm

16. The value of $\frac{1+\tan^2\theta}{\text{Sec}^4\theta}$ is ( )
a) $c\text{os}^2\theta$ b) $\tan^2\theta$ c) $\sec^2\theta$ d) $\cos ec^2\theta$

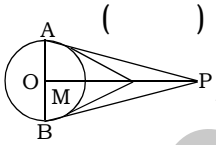
17. If altitude of the sun is 600 then heigh of a tower which costs a shadow of length 30m is ____m ( )
a) $8\sqrt{3}$ b) $15\sqrt{3}$ c) $20\sqrt{3}$ d) $30\sqrt{3}$

18. From a well shuffled pack of cards a card is drawn at random. The probability of getting black quee _____ ( )
a) $\frac{1}{4}$ b) $\frac{1}{24}$ c) $\frac{1}{25}$ d) $\frac{1}{26}$

19. The mean of first 10 natural numbers is ( )
a) $\frac{11}{2}$ b) $\frac{16}{3}$ c) $\frac{18}{5}$ d) $\frac{19}{6}$

20. If a line in a plane is perpendicular to the radius of a circle at its end point on the circle, then the line is ___ ( )
a) Secant b) Chord c) Diameter d) Tangent

21. From a point P, two tangents PA and PB are drawn to a circle with centre 'O' and if OP is equal to the diameter of the circle then ΔAPB is ____ triangle. ( )



a) An equilateral b) An isosceles
c) Aright angled d) Aright isosccles

22. The value of $\tan5^0.\ \tan25^0.\ \tan45^0.\tan65^0.\ \tan85^0$ is ____ ( )
a) 1 b) 4 c) 5 d) 8

23. The arithmetic mean of squares of first 'n' natural numbers is ___ ( )
a) $\frac{n+1}{6}$ b) $\frac{n(n+1)(2n+1)}{6}$ c) $\frac{(n+1)^2}{4}$ d) $\frac{n^3-1}{2}$

24. If the side of an equilateral triangle is 'a' then its height is __ ( )
a) $a\sqrt{2}$ b) $\sqrt{3}\,a$ c) $\frac{a\sqrt{3}}{2}$ d) $\frac{\sqrt{3}}{2a}$

25. If M and Mg represents the mean of the raw and grouped data then ___ ( )
a) M=Mg b) $M \geq Mg$ c) M>Mg d) $Mg \geq M$

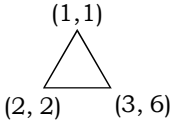
26. A square is Circumscribing a circle. The side of a square is 14cm. Find the area of the square not included in the circle ____ cm^2 ( )
a) 21 b) 42 c) 48 d) 196

27. A physics book contains 250 pages. A pages is selected at random. What is the probability that the number on the page selected is a perfect square? ( )
a) $\frac{4}{127}$ b) $\frac{3}{50}$ c) $\frac{7}{50}$ d) $\frac{9}{27}$

28. If an individual is selected at random, probability that he has a birthday in July in 2012. ( )
a) $\frac{30}{365}$ b) $\frac{31}{365}$ c) $\frac{30}{366}$ d) $\frac{31}{366}$

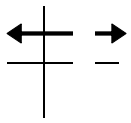
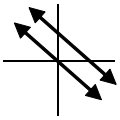
29. If A, B, C are interior angles of ΔABC then $\tan\left(\frac{A+B}{2}\right)$ ( )
a) $\sin\frac{c}{2}$ b) $\cos\frac{c}{2}$ c) $\tan\frac{c}{2}$ d) $\cot\frac{c}{2}$

30. The Centroid of the triangle in the figure is ____ ( )



a) (0, 0) b) (2, 3)
c) 6, 9) d) (3, 4.5)

31. Which of the following lines represent $x+2y+4=0$ and $2x+4y+8=0$ ( )

a) b)  c)  d)

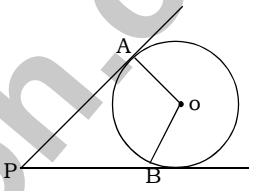
32. From the figure, we have ( )

a) PA = OA+OB

b) PA=PO+OA

c) PA = PB

d) $PA^2 = OA^2 + OB^2$



33. If the two trees of heights h_1, and h_2 subtended angles of 30^0 and 60^0 respectively at the mind point of the line joining their feet then h_1: h_2 is _____ ( )

a) $\sqrt{3}:1$ b) $1:\sqrt{3}$ c) 1:3 d) 3:1