MATHEMATICS

EXAMPLE FOR DIFFERENT TYPES OF QUESTIONS

Time: 3 Hrs. Max.Marks: 100

I **Multiple choice Questions**
Four alternatives are given for each Question.
Choose the correct answer and write its alphabet along with answer

1X30=30

1. If set A={1,2,3,4}, B={2,4} then A-B=
   a) {1,3} b) {2,4} c) {1,2,3,4} d) { }
   Ans: _____

2. In a G.P. Tn x R is =
   a) Tn-1 b) Tn c) Tn+2 d) Tn+1
   Ans: _____

3. If A= $-A^t$ then the matrix A is
   a) Scalar matrix b) Diagonal Matrix
   c) Skew symmetrix matrix d) Symmetrix Matrix
   Ans: _____

4. In nPr, r th place can be filled up in
   a) n+r-1 b) (n-r+1) c) n+(r+1) d) n-r-1
   Ans: _____

5. The H.C.F of (5X-10) and ($5X^2$-20) is
   a) (x+2) (X-2) b) 5(X+2) (X-2) c) 5(X+2) d) 5(X-2)
   Ans: _____

6. The product of H.C.F and L C M of two expression is $6a^3b^4c^2$.If one expression is $2a^3b^3c^2$ then the other expression is
   a) $12a^6b^7c^4$ b) $3a^3b^4c^2$ c) 3a d) $2a^3b^3c^2$
   Ans: _____

7. The expanded form of $\sum_{abc} a^2 + 2$ is
   a) $a^2+b^2+C^2$ b) $a+2+b^2+2+c^2+2$ c) $a^2+b^2+c^2+2$ d) $a^2+b^2+c^2-2$
   Ans: _____

8. $(a^2+b^2+ab)(a-b)$ this is equal to
   a) $(a-b)^3$ b) a^3-b^3 c) $(a+b)^3$ d) a^3+b^3
   Ans: _____

9. The Rationalising factor of $2\sqrt[3]{x}$ is
   a) $2\sqrt[3]{x}$ b) $\sqrt{x^2}$ c) $\sqrt[3]{x^2}$ d) $\sqrt[3]{x}$
   Ans: _____

10. If $F=\frac{G_1Mm}{R^2}$ then R is given by

Ans: a) $\sqrt{\frac{F}{GMm}}$ b) $\sqrt{\frac{GMm}{F}}$ c) $\sqrt[3]{\frac{GMm}{F}}$ d) $\frac{\sqrt{GMm}}{F}$

11. The sum of a number and twice its square is 55. Which of the following is correct Equation.

a) $x+(2x)^2=55$ b) $x+2x^2-55=0$ c) $x+2x^2=55$ d) $x+2x^2=55$

Ans:

12. If m and n are the roots of the equation $x^2-6x+2=0$ then the value of (m+n) mn is

a) 12 b) 7 c) -12 d) 8

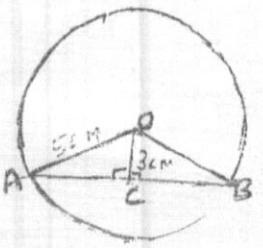
Ans:

13. If one root of the equation $ax^2+bx+c=0$ is the reciprocal of the other, then

a) a=b b) a=c c) b=c d) c=0

Ans:

14. In the given figure, the length of the chord AB in cms is



a) 5 b) 4 c) 8 d) 16

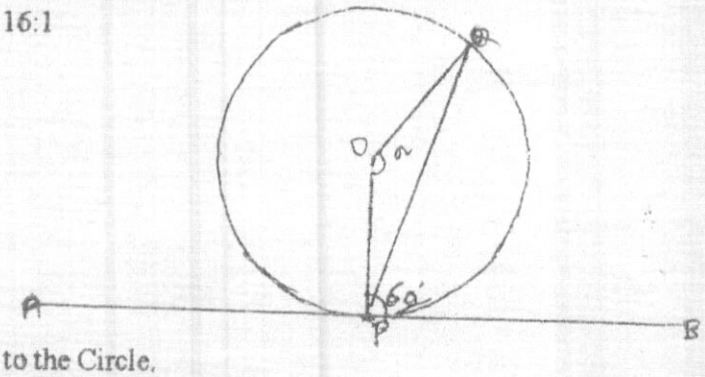
Ans:

15. ABC and DEF are similar triangles
The perimeters are 12 cms and 24 cms respectively. Then the Ratio of areas of ABC and DEF is

a) 1:4 b) 4:1 c) 1:16 d) 16:1

Ans:

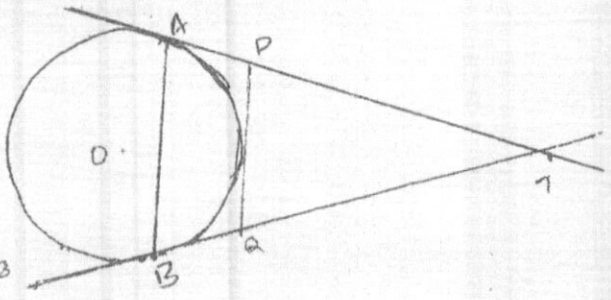
16. In the given figure APB is a tangent at p.
If QPB = 60 then POQ



a) 30° b) 60° c) 90° d) 120°

Ans:

17. In the given figure AT, BT and PQ are the tangents to the Circle.
The perimeter of the triangle TPQ=25cms then the length of tangent AT is



a) 12.5 cms b) 1.25cms c) 25cms d) 50cms

Ans:

18. Te formula to find the volume of hemisphere is

a) $2/3\ \pi r^2$ b) $4/3\ \pi r^3$ c) $3/2\ \pi r^3$ d) $2/3\ \pi r^3$

Ans:

19. A cylinder and a cone have the same radius and height. If the volume of cylinder is 81CC. the volume of cone is

a) 3cc b) 9cc c) 27cc d) 81cc

Ans:

20. In a matrix, the sum of the elements is equal to 12, then the number of area is the graph is

a) 0 b) 6 c) 12 d) 2u

Ans:

II **OBJECTIVE TYPE QUESTIONS:**

FILL IN THE BLANKS

21. In the series 1+0.1+0.01+ +(0.1)9 the number of terms is _____

22. If x,y,z are is H.P. then y=_____

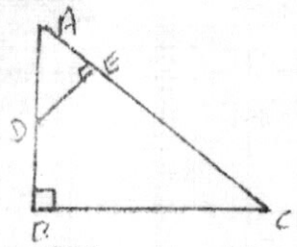
23. If $\begin{bmatrix} 3x & 1 \\ 3 & 2 \end{bmatrix} + \begin{bmatrix} 4 & 5 \\ 2 & 7 \end{bmatrix} = \begin{bmatrix} 8 & 6 \\ 5 & 9 \end{bmatrix}$

Then the value of x is _____

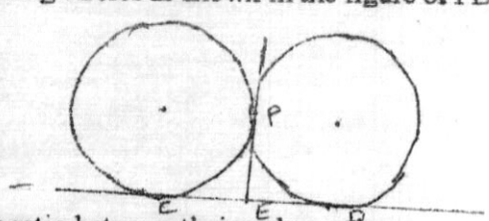
24. The square root variance of distribution of given scores can be termed as _____

25. In the H.C.F of two expressions by division method, the last remainder is a constant and not zero, then the H.C.F of two expressions is _____

26. In $\triangle$ ABC, ABC=90° DE $\perp$ AC, Name the angle corresponding to $\angle$ ADE



27. PE and CD are the common tangents to two touching circles as shown in the figure of PE =5cms CD is equal to _____



28. The radii to two spheres are the ratio 2:3 then the ratio between their volumes is _____

29. Define 'Cyclic Symmetry'.

30. State the 'Converse of Pythagoras theorem'.

III TWO MARKS QUESTIONS

2X18=36

31. If set A={1,2} set B={2,3,5} and set C={2,3,6,8} then find (AuB)n(Auc)
Ans:

32. In a school of 700 students 300 offer science and 473 offer mathematics and 173 offer both science and mathematics. Represent this through Venn Diagram.
Ans:

33. The first term of a GP is 50 and 4^{th} term is 1350. Find its 5^{th} term.
Ans:

34. In a HP the 4^{th} term is 1/9 and 13^{th} term is 1/27 Write the harmonic progression.
Ans:

35. If $A=\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ $B=\begin{bmatrix} 2 & 0 \\ 1 & 3 \end{bmatrix}$ Find AXB
Ans:

36. a) State fundamental counting Principle.
b) Write the meaning of npr.
Ans:

37. What is the order and radicand of the surd $3\sqrt[4]{P}$
Ans:

38. Simplify by rationalizing the denominator. $\frac{3\sqrt{\ }}{\sqrt{6}-\sqrt{3}}$
Ans:

39. Solve using formula: $x + 7x+12=0$
Ans:

40. The perimeter of a rectangular field is 54 mts and its area is 180 sq.mts. find the length and breadth of the field.
Ans:

41. Solve: $\frac{x}{5} - \frac{2}{x} = \frac{9}{5}$

42 Find the value of 'm' so that the product of the roots of the equation. $mx^2 - 5x + (3+m) = 0$ is 4

43. a) Find the sum $(3 \oplus_7 6) \oplus 7$ 4
    b) Find the product $(4 \otimes_{11} 3) \otimes_{11}$ 7

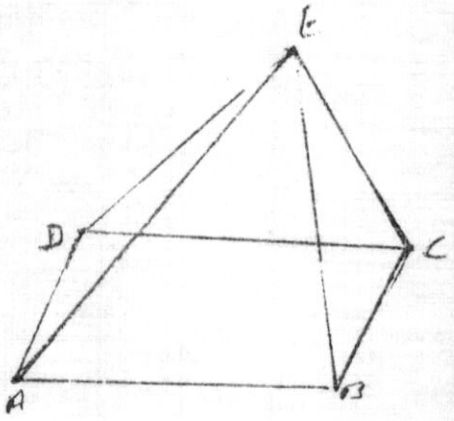
44. Construct two tangents to a circle of radius 3cms from a point 7 cms away from the centre.

45. The height of water level is a cylinder is 7mts. And its diameter is 10 mts. Calculate the volume of water stored is the cylinder.

46. Draw a plan from the following data. Scale 25cms =1 cms.

	To D in mts	
To E 100- - - - - -	250 150- - - -	- - 100 to C
	100 050- - - -	- -50 to B.
	From A.	

47. Verify Eulers formular for the polyhedron given below:
F+V=E+2



48. Draw the graph for the matrix. $\begin{bmatrix} 2 & 1 & 0 \\ 1 & 4 & 1 \\ 0 & 1 & 2 \end{bmatrix}$

IV **THREE MARKS QUESTIONS:** **3X6=18**

49. From 8 Gentlemen and 5 ladies a committee of 6 is to be formed. In how many ways can this can be done so that the committee contains at least 3 Ladies.

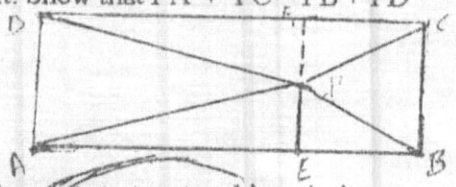
50. Calculate the standard deviation using the following frequency distribution table.

CI	1-5	6-10	11-15	16-20
f	2	3	4	1

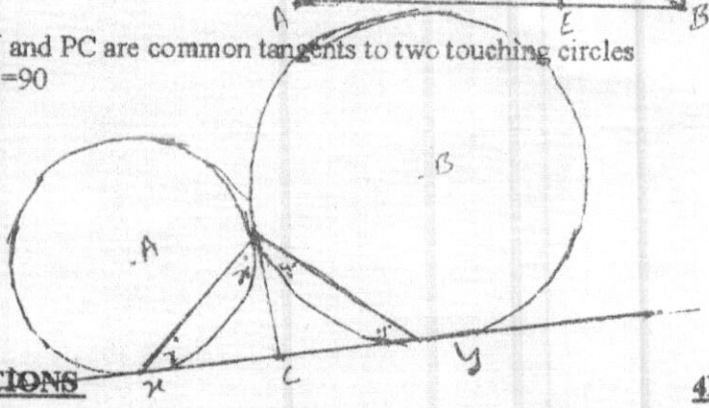
51. Find the L.C.M by division method $x^3-3x^2-10x+24$ and $x^3-2x^2-9x+18$

52. If $x-\frac{1}{x}=4$ show that $x^2+4x^2+\frac{4}{x^2}=148$

53. ABCD is a rectangle and P is a point inside it. Show that $PA^2 + PC^2 = PB^2 + PD^2$



54. In the given figure XY and PC are common tangents to two touching circles
Prove that XPY=90



V **FOUR MARKS QUESTIONS** **4X4=16**

55. In sum of 6 terms which form an AP is 345. The difference of the first and last term is 55. Find the six terms.

56. Draw the graph of Y=X and Y=2X+3 and hence solve the equation X - 2x-3+0

57. Construct a TCT to two circles of radii 4 cms and 2 cms. Whose centres are 10 cms apart. Measure the length of the tangent and verify by calculation.

58. The areas of similar triangles ae proportional to the squares of the corresponding sides. Prove.

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