PART-A

I **Answer all the following questions:** 10×1=10

1. Give the conical representation of 140.
2. If A = {a,b,c}   B={1,2}find B ×A.
3. If f(x) = x-1 and g(x)= $2x^2$-3, find gof (2).
4. Simplify : $(5)^{5^0}$ + $(5^2)^0$.
5. Solve for x ; $\log_{\sqrt{3}} 27 = x$.
6. Find the 8th element of G.P 0.3, 0.6, 1.2, ...
7. Solve for x : 2(7+x) – 10 = 16-2(x-24).
8. Find 12 ½ % of 1 hour 40 minutes.
9. Define deferred Annuity.
10. Express 135^0 in Radian measure.
11. Write the slope of x intercept of the line 3x-2y+1=0.
12. The rainfall in a week in Bangalore are 18 mm, 25mm, 20mm, 9mm, 30mm, 15mm. Find the average rainfall.

PART - B

II **Answer any Ten of the following** $10\times 2 = 20$

13. Find the sum of all divisors of 960.
14. If A={1,3,5,7,9} and B={2,4,6,8,10,12} define a function f:A→B by f(x)=x+1 for all xϵA is the function 1-1 and onto?
15. Prove that $\dfrac{1}{1+x^{p-q}} + \dfrac{1}{1+x^{q-p}} = 1$
16. Prove that Log $\dfrac{7}{8}$ + log $\dfrac{32}{49}$ – log $\dfrac{4}{14}$ = log 2
17. Which term of A P $\dfrac{1}{2},1,\dfrac{3}{2},...$ is 5?
18. If α and β are the roots of the equation$2x^2$+4x+1=0 then find the value of
    a) $\alpha^2\beta+\beta^2\alpha$
    b) $\dfrac{\alpha}{\beta}+\dfrac{\beta}{\alpha}$
19. Solve the following by formula method $12x^2$ + 23x= 24.
20. If the simple interest on a certain sum of money for 2 years is one fifth of the sum. Find the rate of interest.
21. The average score of 35 girls is 80 and the average score of 25 boys in 68. Find the average score of both boys and girls together.
22. A man buys an article at ¾ of its cost value and sells it for 20% more than its cost value. What is his profit percentage?
23. Prove that $\dfrac{Sec\,A+\tan A+1}{Sec\,A-\tan A+1} = Sec\,A+\tan A$
24. Find the value of $Sin^2 \dfrac{\pi}{6} + \cos^2 \dfrac{\pi}{4} - \tan^2 \dfrac{\pi}{4} + \cot^2 \dfrac{\pi}{4}$.
25. Verify whether the points (4,2),(7,5),(9,7) are collinear.

PART-C

III. **Answer any Ten of the following:** 10× 3 = 30

26. Find the HCF of the following by division method 60,72,84.

27. A relation R on a collection of set of integers defined by R={(x,y) : x-y is multiple of 3} show that R is an equivalence relation.

28. The cost of a chair is Rs 600 and the cost of table is Rs 900. Find the least sum of money that a person must possess in order to purchase the whole number of chairs or tables.

29. Solve: log x + log (x-4) – log (x-6) = 0

30. Divide 36 into two parts s.t the sum of the reciprocals is 1/8

31. Solve the following equations graphically $3x + 3y \leq 6$, $x + 4y \leq 4$, $x \geq 0$, $y \geq 0$.

32. Find the present value of annuity due of Rs 8000. for 5 years at 5% p.a

33. In an experiment, a solution of Hydrochloric acid is kept between 30^0 and 35^0C. What is the range of temperature in degree Fahrenheit if C=$\frac{5}{9}(f-32)$.

34. Find the point of trisection of the line joining (3,4) and (5,-2).

35. Find x : $x \sin 30.^0 \csc^2 60^0 = \dfrac{\cos^2 45^0.\tan 60^0}{\cot 30^0.\sec^2 20^0}$.

36. Savitha sold her bag at a loss of 7% . Had she been able to sell it at a gain of 9% it would have fetched Rs 64 more than it did. What is the cost price of the bag?

37. Find the equation of the perpendicular bisector of the line joining A(3,-2) and B(4,1).

38. Find the distance between the parallel lines 2x-3y+4=0 and 4x-6y-5=0

PART-D

IV. **Answer any Six of the following: Each question carries Five marks:** 6×5=30

39. In a group of 150 people, 70 like cricket, 30 like both hockey and cricket. How many like cricket only and not hockey? How many like hockey? Show the result using venn diagram.

40. The first and the last elements of G.P are 4 and 128 respectively and the sum is 252. Find the common ratio and number of elements.

41. A certain two digit number is 4 times the sum of the digits. If 18 is added to the number, the digits get interchanged. Find the number.

42. A sum triples itself in 4 years under compound interest at a certain rate of interest. Find the time it would take to become 9 times of itself.

43. Find the present value of an annuity of Rs 2000 payable at the beginning of each quarter for the next 3 years if the rate of interest is 4% p.a compounded quarterly.

44. A Manufacturer produced and sells balloons at Rs 8 /unit. His fixed cost is Rs 6500 and variable Cost/balloon is Rs 3.5, Calculate:
    a) Revenue function   b) Cost function
    c) Profit function   d) Break-even point

45. a) Form the quadratic equation whose roots are -3 and 6.

    b) Evaluate using log table: $\dfrac{0.5634 \times 0.0635}{2.563 \times 12.5}$

46. Find the equation of straight line passing through the point (2, 2) such that the sum of its intercepts on the axes = 9.

47. Find the locus of a point equidistant from (3,0) & (-3,0)

48. Find the ratio in which the line segment joining the points (4,5) and (1,2) divided by the y-axis? Also find the coordinates of the point of division.

PART-E

V. **Answer any One of the following:** 1×10=10

49. a) Find the image of the point (2,4) on the line x+y-10 = 0. (4)

b) prove that $(\sin A + \cos ecA)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$ (4)

c)   Evaluate $\dfrac{(1+2i)}{(3-4i)}$. (2)

(2)

50. a) Find the sum to n terms of series 5+55+555+..... (4)

  b) In what time will a sum of money double itself at 10% p.a compounded interest payable half yearly. (4)

c) Find the LCM of $\dfrac{1}{3}, \dfrac{5}{6}, \dfrac{2}{9}$. (2)

* * * *