PART – A

I.   **Answer all the questions**

1. Write the canonical representation of 960.

2. If A={1,2,3,4,5} B={2,4,6,8} Find A-B.

3. If $f: R \rightarrow R$ defined by f(x) =4x-3. Find f(1/2)

4. Simplify $\left(\frac{2x^2}{y^3}\right)^4$

5. Find x if $\log_2 \sqrt{32} = x$

6. Find the 8th term of 10 , 1 , 0.1,…

7. Solve for x: 8x+17x-51=16x-36+12

8. Convert 5:8 ratio into percentage

9. Define annuity.

10. Express $\frac{7\pi}{8}$ in degrees

11. The height of 5 girls in a class are 90cm, 95cm, 100cm, 98cm, and 102cm. Find their average height.

12. Find the slope of line joining the points (3,2) and (-1,5)

PART – B

II.   **Answer all the questions**

13. If H.C.F of two numbers is 42, and their product is 52920. Find their L.C.M

14. If A={1,2,5,6,7} and B={0,3,5,7,8}. Then verify $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

15. Find the number of positive divisors of 825.

16. Simplify $\frac{2^{n+1}+2^{n-1}}{2^n+2^{n+2}}$

17. How many terms of AP -3, -5, -7,.. amount to -120?

18. Solve the following by formula method, $3x^2 - x - 10 = 0$

19. In what time will Rs. 35000 amount to Rs. 45500 at 7.5%p.a SI?

20. Solve 3(1-x)<2(x+4) and represent it on number line.

21. The average age of 12 boys is 8years. Another boy of 21 years joins the group. Fine the average of newly formed group.

22. After revaluation students mark was changed from 80 to 92. Find the percentage increase in the marks.

23. Prove that (1+cotA)^2+(1-cotA)^2=2cosec^{2}A.

24. Find the value of $3tan^2 \frac{\pi}{6} + \frac{4}{3}cos^2 \frac{\pi}{6}$.

25. Find the equation of the straight line passing through (-1.-2) with slope 4/7.

PART – C

III.   **Answer all the questions**

26. Prove that √5 is irrational.

27. If $f(x) = x^2$ and $g(x) = x + 1$. Find (i) f o g(x)   (ii) f o g(2)   (ii) g o f(x)

28. In a certain college with 50 students, 30 take milk, 10 take both tea, and milk. How many take atleast one of the two drinks.

29. If p^x=q^y=r^z=s^w and pq=rs, then prove that $\frac{1}{x} + \frac{1}{y} = \frac{1}{z} + \frac{1}{w}$

30. Find the first three terms in GP whose sum is 13/3 and product of extremes is 1.
31. In how many years an annuity of Rs. 100 amounts to 3137.12 at 4.5% per annum, compounded annually.
32. Solve the linear inequalities graphically, 3x+2y≤6 and 4x-y≤6.
33. A book seller bought 228 note books at an average price of Rs. 8.5 in which 80 books he bought at Rs. 7.5 each and 84 books at Rs. 10.5 each. Find the price of remaining books per unit.
34. Find the ratio in which the line segment joining (2,-3) and (5,6) is divided by x axis.
35. Nihal refused to sell his book for Rs. 726 because there was a loss of 12%. If he sold the book at a profit of 5%. Find the selling price.
36. If tanA=5/12, and A is acute, Find 3sinA-4cosA.
37. Verify whether the points A(2,2) B(6,3) and C(4,1) form a right angled triangle.
38. If α and β are the roots of the equation 2x^2+5x+5=0, then find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$

PART – D

IV. Answer all the questions

39. In a survey it was found that 31 people liked product A,36 liked product B and 39 liked product C. If 24 people liked products A and B, 22 people liked products C and A, 24 people liked products B and C, 18 liked all the three products, find how many liked product C only?
40. Find the sum of all integers between 60 and 400 which are divisible by 13.
41. Three years ago father was 4 times old as his son and after 5 years he will be three times as old as his son. Find their present ages.
42. At what rate percent of compound interest a sum of money will double itself in 12 years?
43. Romeo aged 40 wishes his wife Juliet to have Rs. 40lakh at his death. If the expectation of his life is another 30years and starts making an annual investment of 8% p.a compound interest computed semi annually. How much should Romeo invest every year in annuity?
44. A shopkeeper sold a watch at 5% loss. Had he purchased it at 10% less cost and sold it for Rs. 140 more, his gain would have be one fourth of original cost price. Find the cost price of the watch
45. Evaluate using log. Tables $\frac{0.5634 \times 0.0635}{2.563 \times 12.5}$
46. Find the equation of straight line passing through the point of intersection of 2x+4y=3 and x+5y=1 and making equal positive intercepts on the co-ordinate axes.
47. Find the equation of locus of a point such that the sum of its distance from (0,2) and (0,-2) is 6.
48. A person spent 30% of his wealth and thereafter Rs. 20000 and further 10% of the remainder. If Rs. 29250 is still remaining, what was his total wealth?

PART – E

V. Answer all the questions

49. (a) Prove that the lines x+y+4=0, 2x=3y+7 and 3x+y+6=0 are concurrent, also find the point of concurrency.   4
    (b) Find x, $x sin30^0 . cosec^2 60^0 = \frac{cos^2 45^0 tan60^0}{cot^2 30^0 sec^2 0^0}$ 4
    (c) Find the number of digits in 3^{20} 2
50. (a) suppose the total daily cost Of producing 'x' chair is given by y=2.5x+300   4
    (i) if each chair is sold for Rs. 4 per chair . What is the BEP?
    (ii) If the selling price is increased by Rs. 5 per chair. What is the new BEP?
    (iii) Find the fixed and variable cost.
    (b) Find the sum to n terms of the series: 0.5+0.55+0.555+.....n terms .   4
    (c) The HCF of two numbers is 16, and their LCM is 160. If one of the number is 64. Find the other number.   2