

Time : 3 Hrs.

Maximum Marks: 90

General Instructions:

1. The question paper consists of four Sections - A, B, C and D. Section - A consists of 4 questions of 1 mark each; Section-B consists of 6 questions of 2 marks each; Section-C consists of 10 questions of 3 marks each and Section-D consists of 11 questions of 4 marks each.
2. All questions are compulsory.
3. In questions on construction, the drawing should be neat and exactly as per the given measurements. Use ruler and compass only.
4. There is no overall choice, However, internal choices have been given in some questions.

Section - 'A'

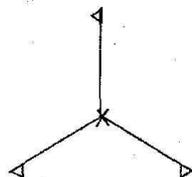
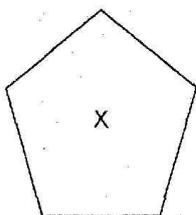
Question numbers 1 to 4 carry 1 mark each.

1. Find the value of $\left[\left\{ \left(\frac{-1}{2} \right)^2 \right\}^{-2} \right]^{-1}$.
2. Write the degree of a constant polynomial.
3. Write the angle of rotation of a square.
4. Name a geometrical figure which has linear symmetry as well as rotational symmetry.

Section - 'B'

Question numbers 5 to 10 carry 2 marks each.

5. Evaluate :- $\left[7 \left\{ (8)^{\frac{1}{3}} + \left(125^{\frac{1}{3}} \right) \right\}^2 \right]^{\frac{1}{3}}$.
6. Evaluate :- $(0.125)^{\frac{-4}{3}}$.
7. Divide $(z^2 - 10z + 16)$ by $(z - 2)$ using factor method.
8. Solve:- $\frac{7-x}{5x+1} = 3$.
9. Divide the polynomial $(9m^4 + 12m^3 - 15m^2 + 6m + 3)$ by $(-3m)$.
10. Give the order of rotational symmetry of the given figures at the marked point.



Section - 'C'

Question numbers 11 to 20 carry 3 marks each.

11. Simplify:- $\frac{(49)^{\frac{-3}{2}} \times (256)^{\frac{-1}{4}}}{(343)^{\frac{-1}{3}} \times (64)^{\frac{-1}{3}}}$.

12. Find the amount when Rs. 50,000 is invested for 2 years, compounded annually, the rate of interest being 8% p.a. during the first year and 9% p.a. during the second year. Also, find the total compound interest.

OR

At what rate per annum will a sum of Rs. 6250 be compounded to Rs. 7840 in 2 years?

13. Using long division method state whether or not the second polynomial is a factor of the first polynomial.

$$x^3 - 3x^2 + 3x - 1; -1 + x$$

OR

Divide $p^4 + p^3 - p^2 + 1$ by $p - 1$ and find the quotient and remainder.

14. Two years ago, Dilip was three times as old as his son and two years hence, twice his age will be equal to five times that of his son, Find their present ages.

OR

Two numbers are in the ratio 5: 7 and their sum is 156. Find the numbers.

15. Solve for y: $\frac{y+6}{4} + \frac{y-3}{5} = \frac{5y-4}{8}$.

16. ABCD is a rhombus. If $\angle ADB = 50^\circ$, find the angles of the rhombus.

17. If in a quadrilateral ABCD, $AB = CD$ and $AD = BC$, prove that it is a parallelogram.

18. Construct a quadrilateral ABCD in which $AB = CD = 5\text{cm}$, $BC = 4\text{cm}$, diagonals $AC = 7\text{cm}$ and $BD = 8\text{cm}$.

19. A card is drawn at random from a well-shuffled pack of 52 cards. Find the probability that the card drawn is:
(i) a jack (ii) a heart (iii) a black king

20. The daily wages (in Rs.) of 15 workers in a factory are the following:

300, 250, 200, 250, 200, 250, 200, 150,
350, 200, 150, 300, 150, 200, 250

Prepare a frequency distribution table and give answers to the following:-

- (i) What is the range of the wages (in Rs)?
(ii) How many workers are getting Rs. 300?
(iii) How many workers are getting the maximum wages?

Section D

Question numbers 21 to 31 carry 4 marks each.

21. Solve the given equation for x:- $5^{x+1} - 5^{x-1} = 120$.

22. Calculate the compound interest on Rs. 24000 for 9 months if the interest is payable quarterly at the rate of 8% p.a.

23. The difference between the. compound interest and the simple interest on a certain sum of money at 5% per annum for 3 years is Rs. 54.90. Find the sum.

24. The population of a village is increasing at the rate of 8% p.a. in the first year and decreased at the rate of 5% p.a. in the second year. What will be the population of the village after 2 years if the present population is 12,500?

25. Divide $\{(x-1)(4x^3 - 37x^2 + 52x - 5)\} + (5x - 2)$ by $(-5 + 4x)$ and verify your answer.

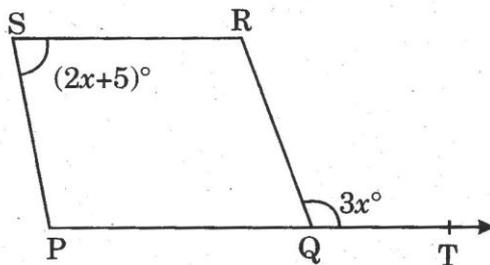
26. A steamer, going downstream in a river, covers the distance between two towns in 15 hours. Coming back upstream, it covers this distance in 20 hours. If the speed of the water is 3km/hr, find the distance between the two towns.

27. The lengths of two adjacent sides of a rectangle are in the ratio 3: 4. If its diagonal is 20 cm, find the lengths of the sides and hence, the perimeter of the rectangle.

28. ABCD is a parallelogram in which the diagonals bisect each other at right angles. Show that it is a rhombus.

OR

In the given figure PQRS is a parallelogram in which $\angle S = (2x + 5)^\circ$ and $\angle RQT = (3x)^\circ$. Find all the interior angles of the parallelogram PQRS.

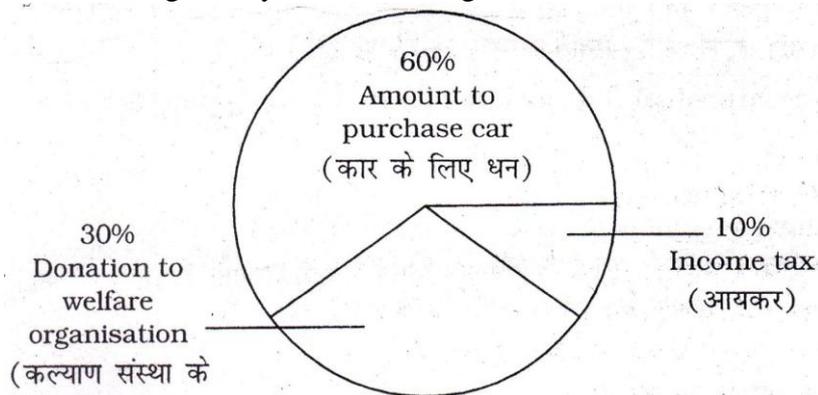


29. Construct a quadrilateral ABGD in which $AB = 4.5$ cm, $BC = 5$ cm, $\angle A = 60^\circ$ and $\angle B = 120^\circ$ and $\angle C = 60^\circ$.

30. Ram, a sales manager, earns profit of Rs. 4,00,000 in the month of July. He decides to distribute this amount for different purposes as depicted in given pie-chart:

Give answers to the following questions with the help of pie-chart -

- (i) Find the money he fixed for purchasing car.
- (ii) Find the amount he gave for welfare organization.
- (iii) Find the amount he paid for income tax.
- (iv) Paying Income tax and donating money for welfare organization show which values in him?



OR

There are 40 students in a class. Their ages are as follows. Construct a frequency distribution table with class intervals 5-10, 10-15 etc. Draw histogram also.

13	21	6	5	8	17	14	13	6	6	7	8	15	16
9	10	10	9	7	8	15	14	12	11	9	7	6	8
6	10	13	17	17	16	12	12	9	8	13	14		

31. A bag contains 5 red balls, 8 white balls, 4 green balls and 7 black balls. A ball is drawn at random from the bag. Find the probability that it is a

- (i) red ball
- (ii) white ball
- (iii) green ball
- (iv) black ball