SYLLABUS : GRAND TEST

GENERAL INSTRUCTIONS : Draw Diagrams with Pencils.

- All questions are compulsory. **Maximum Marks are 60**.
- The question paper consists of 24 Questions.
- **Section – A** : Question 1 to 6 are 1mark each.
- **Section** – B : Question 7 to 12 are 2 marks each.
- **Section** – C : Question 13 to 18 are 3 marks each.
- **Section** – C : Question 19 to 24 are 4 marks each.

SECTION: A (1 × 6 = 6)

1. Express the following rational numbers in exponential form.
(i) $-\frac{144}{169}$

2. Express the rational numbers:
(i) $\left(-\frac{3}{4}\right)^4$

3. Multiply the monomials:
(i) $12a^2b^6c^8$ and $-3\ a^7b^4c^3$

4. Simplify:
(i) $ab(a^2 - b^2) + b^3(a - 2b)$

5. Find the mode of the following observations:
25, 14, 28, 17, 18, 14, 25, 14, 17, 14

6. The heights (in cm) of 8 students of a class are as follows:
145, 150, 152, 149, 160, 155, 151, 148
Find the median heights.

SECTION: B (2 × 6 = 12)

7. By what number should $(24)^{-1}$ be divided so that the quotient may be equal to $(4)^{-1}$?

8. Find the value of x so that
(i) $\left(\frac{3}{4}\right)^{-9} \times \left(\frac{3}{4}\right)^{-7} = \left(\frac{3}{4}\right)^{4x}$

9. Simplify the following:
(i) $\left(\frac{2}{3}x + 4\right)\left(\frac{3}{2}x + 6\right) - \left(\frac{1}{7}x - 1\right)\left(\frac{1}{7}x + 1\right)$

10. Simplify $p^2(2pa + q^3) - 2q^2(p^2q + 5)$.

11. Draw a right triangle with hypotenuse of length 5 cm and one side of length 4 cm.

12. The weights (in kg) of 10 students of a class are
43.5, 49.5, 52, 43, 47, 44.5, 38.5, 40, 47, 38
(i) What is the mean weight?
(ii) What is the range of the weights of the students?
(iii) Find the number of students having weight more than the mean weight.

SECTION: C (3× 6 = 18)

13. Simplify: $\left[\left(\frac{2}{3}\right)^2\right]^3 \times \left(\frac{2}{3}\right)^{-4} \times 3^{-1} \times \frac{1}{6}$

14. Find the product of $(2pq - q^2)(3p^2 + 4q)$ and verify the result when p = 2 and q = −2.

15. Simply the following and verify the results for the given value:
(i) $(p^2 + q^2 + r^2)(pq + qr)$; p = 2, q = - 3, r =1

16. Draw a triangle ABC in which BC = 5.2 cm ∠B = 60^0 and ∠A = 100^0.

17. Draw ΔABC in which ∠A = 120^0 and AB = AC = 3cm. Draw the bisector of angle A.

18. The mean of 8 observations was found to be 57. Later on, it was discovered that one observation, ie., 48 was misread as 84. Find the correct mean.

SECTION: D (4 × 6 = 24)

19. (i) $\left(\frac{3}{4}\right)^{2x+1} = \left[\left(\frac{3}{4}\right)^3\right]^3$ (ii) $\frac{1}{16} \times \left(\frac{1}{2}\right)^2 = \left(\frac{1}{2}\right)^{3(x-2)}$

20. Factorise $(5x^2 - 10xy) - 4x + 8y$

21. Construct a triangle PQR with PQ = 7.5 cm ∠RPQ = 45^0, ∠RQP = 45^0. Measure the third angle. What kind of a triangle is it?

22. Draw ΔABC such that BC = 5 cm, AB = 4cm, AC = 2.5 cm. Also draw the perpendicular bisector of BC.

23. The average salary of 19 workers in a factory is Rs 850 per month. If the salary of the manager Rs 3,500 per month, find the average monthly salary paid to all the employees.

24. In a certain hospital, the mean birth rate of a week was 35. If the mean birth rate from Monday to Thursday was 32 and that of Thursday to Sunday was 36, find the number of births on Thursday.