SUBJECT : MATHEMATICS

Time : 3 hrs. **M.M. : 80**

General Instructions :

(i) All questions are compulsory.

(ii) Read all questions very carefully.

(iii) Questions 1 to 10 carry 1 mark each.

(iv) Questions 11 to 18 carry 2 marks each.

(v) Questions 19 to 28 carry 3 marks each.

(vi) Questions 29 to 34 carry 4 marks each.

Q1. Evaluate 6% of 150.

Q2. Find the area of a square whose perimeter is 16cm.

Q3. Express 0.000768 in standard form.

Q4. Given an example of a trinomial.

Q5. Find the area of a triangle whose base is 12cm and altitude is 8cm.

Q6. Write the coordinates of origin.

Q7. Find the common factors of $6x^2y$, $2x$.

Q8. Calculate the surface area of a dice of side 2cm.

Q9. Find the value of the letter B

$$\begin{array}{r} 1\,B \\ \times\, B \\ \hline 9\,B \end{array}$$

Q10. Find the product of $-3x^2y$ and $2xyz$.

Q11. The area of a trapezium is $80cm^2$, the length of one of the parallel sides is 10cm and its height is 4cm. Find the length of the other parallel side.

Q12. Identify the terms and coefficients for the expression $0.5ab + 7b^2$.

Q13. Saurabh bought an air cooler for ₹ 4400 including a tax of 10%. Find the price of the air cooler before VAT was added.

Q14. Divide $(7p^2 + 14p) \div (p + 2)$.

Q15. If x and y vary directly, find the value of the missing numbers in the following table :

x	5	10	—
y	7	—	21

Q16. Find the values of the letters P and Q

$$\begin{array}{r} 3\ 1\ P \\ +\ 1\ P\ 3 \\ \hline Q\ 0\ 1 \end{array}$$

Q17. At a clearance sale, all goods are on sale at 45% discount. If the marked price of a shirt is ₹ 600, find its selling price.

Q18. Find the value of : $(5^0 + 7^{-1}) \times 7^2$.

Q19. If a box of toffees is divided among 15 children, they will get 8 toffees each. How many would each get, if the number of children is increased by 5?

Q20. Plot the following points on a graph sheet. Name the figure obtained by joining these points (3, 7) ; (1, 2) ; (6, 2)

Q21. Simplify $(y^2 - 7)(y + 5) + 35 + 3y^2$.

Q22. A godown in the form of cuboid measures 60m × 40m × 30m. How many cuboidal boxes can be stored in it if the volume of 1 box is $8m^3$?

Q23. Construct a rhombus whose diagonals are 6cm and 4cm long.

Q24. Factorise $x^2 - 11x + 24$.

Q25. Neha bought a second hand radio-set for ₹ 1050. She spent ₹ 450 on its repairing. For gaining 10%, what should be the selling price of the radio-set?

Q26. Find the value of x for which $3^{x+2} \times 3^5 = 3^9$.

Q27. A train is moving at a uniform speed of 75 km/hour.

(a) How far will it travel in 20 minutes?

(b) Find the time required to cover a distance of 250 km.

Q28. If 1z53 is a multiple of 9, where z is a digit, what might be the values of z?

Q29. Find the cost of painting a closed cylindrical drum whose radius is 49cm and height is 200cm, if the cost of painting is ₹ 2 per cm^2.

Q30. Construct a quadrilateral WORK given WO = 4 cm, OR = 5 cm, RK = 6 cm, WK = 4.6 cm and diagonal OK = 3 cm. Write steps of construction.

Q31. Using a suitable identity, evaluate

(a) 91^2

(b) $\left(\frac{x}{2} + \frac{3y}{4}\right)\left(\frac{x}{2} - \frac{3y}{4}\right)$

Q32. Raghav borrows ₹ 12000 at 9% per annum for 2 years at simple interest and Chahat borrows the same amount for the same time period at 10% per annum, compounded annually. Who pays more interest and by how much?

Q33. (a) Simplify and express the result in the power notation

$$\left(\frac{2}{3}\right)^4 \times (3)^4$$

(b) Find and correct the error in the following mathematical statement : $5x + 7x = 12x^2$

Q34. (a) The following table gives the quantity of petrol and its cost. Plot a graph to show the data.

No. of litres of petrol	2	4	6	8
Cost of petrol (in ₹)	150	300	450	600

(b) It is important to save fuels like coal, petroleum etc. Give reason.