Paper 4

Business Mathematics &Statistics Fundamentals

TEST PAPER – I

Time Allowed : 3 hours   **Full Marks : 100**

(Answer all Five Questions : All Questions are of Equal Value)

1. (a) If $\dfrac{x}{y+z} = \dfrac{y}{z+x} = \dfrac{z}{x+y} = k,$ show that $K = \dfrac{1}{2}$ if $(x + y + z) \neq 0$

(b) If $x = 2 + 2^{2/3} + 2^{1/3}$ show that $x^3 - 6x^2 + 6x - 2 = 0$

2. (a) The area of a regular hexagon is $54\sqrt{3}$ sq. cm, find the length of a side, and also perimeter of hexagon.

(b) A solid rectangular block of metal 49 cm. by 44 cm. by 18 cm. is melted and formed into a solid sphere, find the radius of the sphere $\left(\pi = \dfrac{22}{7} \right).$

3. (a) Find the locus of a point which moves so that the sum of the squares of its distances from 2 points (3, 0) and (– 3, 0) is 36.

(b) Find the equation of the circle whose centre is (2, – 4) and passes through the centre of the circle $x^2 + y^2 - 2x + 2y - 38 = 0.$

4. (a) Evaluate : (i) $\displaystyle\lim_{x \to 0} \dfrac{\sqrt{1+x} - \sqrt{1-x}}{x}$ (ii) $\displaystyle\lim_{x \to -2} \dfrac{x^2 - 4}{x + 2}$

(b) Evaluate : (i) $\displaystyle\int x \left(3x^2 + 7 \right)^7 dx$ (ii) $\displaystyle\int_1^e x \log x \, dx.$

5. (a) Out of Rs. 500 spent by a motor company, items of expenses are as follows :

wages – Rs. 125, materials – Rs. 110, taxes – Rs. 180, distributed points– Rs. 65 and administration – Rs. 20.

Draw a pie chart to depict the above items

(b) Find the median from the frequency distribution

Marks	No. of students
Less than 10	5
” ” 20	9
” ” 30	15
” ” 40	18
” ” 50	20