

QUANTITATIVE SKILLS

Duration: 3 Hours

Total Marks: 60

Instructions:

- I. Figures to the right indicate maximum marks
- II. Start each answer on a fresh page
- III. All questions are compulsory
- IV. Standard calculators allowed

Q.1 Attempt the following

- A. Prepare the cumulative frequency tables of (i) less than type (ii) greater than type, for the following frequency distribution of 1000 workers. (6)

Age(in years)	Number of workers
20-25	30
25-30	90
30-35	150
35-40	250
40-45	230
45-50	120
50-55	100
55-60	30

- B. The following table gives the rainfall in mm of some areas of Mumbai on 26th July 2015. Draw simple bar diagram for the same (6)

Area	Rainfall in mm
Borivali	2500
Goregaon	3000
Bandra	1750
Kurla	2200

OR

- I. Draw histogram and frequency polygon from the following data (6)

Height in cms	150-155	155-160	160-165	165-170	170-175	175-180
Number of persons	7	15	37	29	10	2

- II. Draw frequency curve for the following data related to the salary of the employees of a company (6)

Income in thousands	10-12	12-14	14-16	16-18	18-20	20-22	22-24	24-26	26-28	28-30
Number of employees	3	4	7	9	11	12	8	6	4	2

Q.2 Attempt the following

- A. In an A.P if the 6th term is 29 and the 12th term is 53, find its nth term (4)
- B. The sum of three numbers in A.P is 30 and their product is 840 (4)
- C. If for an A.P., $d = 10$ and $S_{30} = 4500$ find a and T_{30} . (4)

OR

- I. Find the sum $7 + 77 + 777 + 7777 + \dots$ up to nth term (6)
- II. Find the sum $3 + 12 + 48 + 192 + \dots$ up to n terms (3)
- III. let the numbers a, b, c be in G.P then prove that $b = \sqrt{ac}$ (3)

Q.3 Attempt the following

- A. Solve the quadratic equation $3x^2 - 7x + 4 = 0$ (6)
- B. The annual incomes of A and B are in the ratio 4:3 and their expenditures are in the ratio 3:2. If they each save Rs. 600 at end of a year. Find their annual income (6)

OR

- I. Express the following fractions into percentage (3)
- a. $\frac{1}{2}$ b. $\frac{2}{5}$ c. $\frac{1}{4}$

- II. Solve the following simultaneous equations by elimination method (3)

$$2x + 3y = 23 \text{ and } x + y = 9$$

- III. It was intended to divide Rs. 1980 among A, B and C in the ratio 2:3:4, but by mistake the distribution was made in the ratio $1/2 : 1/3 : 1/6$. How much each gain or lose by mistake? (6)

Q.4 Attempt the following

- A. A shopkeeper paid Rs. 493 for a parcel. This parcel contains 50 articles, on which he was given 15% discount. Find the list price of the article (6)
- B. An agent receives del credere commission of 2% in addition to general commission of 6%. He sells goods worth Rs. 16700 on credit and Rs. 10300 in cash. Find his commission (6)

OR

- I. By mistake a bank clerk calculated the interest on a certain principal for 6 months at 5.25% per annum instead of 5 months at 6.25% per annum. He thus made an error of 40 paise. What was the principal? (6)
- II. The sum of digits of a two digit number is 9. If the order of digits is reversed, the new number exceeds the original number by 45. Find the number. (6)

Q.5 Attempt the following

- A. On selling an article for Rs. 3696, Nirmal earns a profit of $1/6^{\text{th}}$ of its cost price. Find the profit percent on selling price. (6)
- B. A manufacturer allows successive discounts $d_1\%$, $d_2\%$, $d_3\%$ on the sale of an article. Show that the amount due is given by $P \left(1 - \frac{d_1}{100}\right) \left(1 - \frac{d_2}{100}\right) \left(1 - \frac{d_3}{100}\right)$, where P is principal amount (6)

OR

- I. Find the compound interest on Rs. 20000 at 12% per annum, if the interest is calculated for 2 years (a) annually (b) half yearly (c) quarterly (d) monthly given $(1.12^2 = 1.2544, 1.06^4 = 1.2625, 1.03^8 = 1.2668, 1.01^{24} = 1.2697)$ (6)
- II. Write four differences between simple interest and compound interest (6)

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