

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 the marks of 900 students. (6)

Class intervals	Frequency
0-10	10
10-20	10
20-30	50
30-40	170
40-50	200
50-60	150
60-70	150
70-80	100
80-90	50
90-100	10

- B. Draw multiple bar diagram for the following data (6)

Year	Birth rate per thousand population	
	Rural	Urban
2013	30	25
2014	28	23
2015	26	22
2016	25	21

OR

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

Profits per shop in thousand Rs.	0-100	100-200	200-300	300-400	400-500	500-600	600-700
Number of shops	15	20	28	32	18	12	5

- II. Draw frequency polygon for the following data (6)

Class interval	0-10	10-20	20-30	30-40	40-50	50-60	60-70
frequency	5	10	28	26	22	15	4

Q.2 Attempt the following

- A. In a G.P if the 3rd term is 63 and the 6th term is 1701, find its n^{th} term (4)
- B. Check whether 3,6,12,24,... is in A.P or G.P and hence find the sum of first 10 terms of the sequence (4)
- C. Find three numbers in GP such that their product is 216 and the sum of the first and the third is 20 (4)

OR

- I. Find the sum $1 + 11 + 111 + 1111 + \dots$ up to first n terms (6)
- II. Find the sum $3+7+11+15+\dots$ up to n terms (3)
- III. let the numbers a, b, c be in A.P then prove that $b = \frac{a+c}{2}$ (3)

Q.3 Attempt the following

- A. Solve the quadratic equations $3x^2 + 7x + 4 = 0$ and $3x^2 - 7x + 4 = 0$ (6)
- B. Sumit is 5 years older than Rajesh. 5 years later their ages will be in the ratio 5:4. Find their present age (6)

OR

- I. Express the following percentages into fractions (3)
- a. 50% b. 40% c. 25%

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

$$2x + 3y = 22 \text{ and } x + y = 9$$

- III. Abhi Prakashan supplies 80 copies of Business Mathematics priced Rs.90. to a college for Rs. 5904. Find the rate of trade discount and invoice price per book (6)

Q.4 Attempt the following

- A. Anil purchases 180 dozen eggs @ Rs. 15.80 per dozen, 60 eggs are broken in transportation.

He sells the remaining egg @ Rs. 18.00 per dozen. Calculate his profit. (6)

- B. Deepak receives 5% commission on cash sale and 4% commission on credit sale. If on a total sale of Rs. 50000, he receives Rs.2400. find the amount of cash and credit sale (6)

OR

- I. Suresh borrowed Rs.500000 from a bank at 11% p.a. simple interest. After 5 years he paid Rs. 375000. Find the amount Suresh will have to pay to clear the loan after 2 years then (6)

- II. Find two numbers whose sum is 36 and difference is 12 (6)

Q.5 Attempt the following

- A. Find the future value of an ordinary annuity of Rs.5000 paid at the end of each six months for 10 years at 8% per year rate compounded semi annually. What will be the amount of annuity if compounded quarterly? Given $1.02^{40} = 2.2080$ (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 $p \left(1 - \frac{d_1}{100}\right) \left(1 - \frac{d_2}{100}\right) \left(1 - \frac{d_3}{100}\right)$ (6)

OR

- I. Find the compound interest on Rs. 11920 at 12% per annum, if the interest is calculated (a) annually (b) half yearly (c) quarterly (d) monthly (6)
- II. Differentiate between simple interest and compound interest (6)

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