

QUANTITATIVE SKILLS

Duration: 2 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. Non-scientific calculators allowed

**Q.1 Attempt the following**

- A. Explain in brief limitations of statistics (6)
- B. What is frequency distribution? Prepare a suitable frequency distribution table of the marks of 30 students in the paper Quantitative skills, where the marks are given below.(out of 100) (6)

52,	60,	40,	60,	82,	95,	41,	61,	75,	75,
53,	53,	80,	76,	84,	50,	67,	65,	78,	77,
70,	95,	68,	69,	55,	80,	79,	79,	54,	70,

OR

- I. What do you mean by classification of data? Write chief characteristic features of classification. (6)
- II. In the following table the times taken by 40 students to solve a problem are recorded to the nearest second. Construct a frequency distribution table for it. (6)

138	164	150	132	144	125	149	157
146	158	140	147	136	148	152	144
168	126	138	176	163	119	154	165
146	173	142	147	135	153	140	135
161	145	135	142	150	156	145	128

**Q.2 Attempt the following**

- A. Find 3 numbers in G.P such that their product is 4096 and the sum of the first and the third term is 68 (4)
- B. The sum of 3 numbers in A.P is 36 and the sum of their squares is 464. Find the 3 numbers (4)
- C. Find the sum of the first 20 terms of the sequence below (4)

$$9, 18, 27, 36, \dots$$

OR

- I. Find the sum  $0.5 + 0.55 + 0.555 + 0.5555 + \dots$  up to first  $n$  terms (6)
- II. Find  $n$  if the sum  $7 + 11 + 15 + \dots$  up to  $n$  terms = 582 (6)

**Q.3 Attempt the following**

- A. Find  $n^{\text{th}}$  term of 3, 12, 48, 192, ... (3)
- B. solve the following simultaneous equations by elimination method (3)

$$x + y = 9$$

$$x - y = 1$$

- C. Solve the following quadratic equation by factorization method (6)

$$13 - \frac{42}{x} = x$$

OR

- I. Write formula for  $n^{\text{th}}$  term of an G.P whose first term is  $a$  and the common ratio is  $r$ .  
Also find  $15^{\text{th}}$  term of the sequence  $3, 1, \frac{1}{3}, \frac{1}{9}, \dots$  (3)
- II. Solve the following simultaneous equations by substitution method (3)

$$\frac{x}{6} - \frac{y}{3} = -1$$

$$\frac{x}{3} + \frac{y}{4} = 9$$

- III. Solve the quadratic equation  $x^2 - x - 72 = 0$  by using formula (6)

**Q.4 Attempt the following**

- A. A business man gives 20% commission on the sale up to Rs. 10000 and 24% on the amount exceeding Rs.10000. if the agent receives Rs.2480 as commission find the total sale. (6)
- B. If the selling price of 10 articles is equal to the purchase price of 11 articles, calculate the gain% on cost price and on selling price. (6)

**OR**

- I. 3 horses plough as much as 5 bullocks in a certain period. If 9 horses can plough a field in 20 days. Find how many bullocks can plough the same field in 10 days (6)
- II. A manufacturer offers 20%, 10% and 10% three successive discounts. Find the rate of equivalent discount. (6)

**Q.5 Attempt the following**

- A. Convert the following into % (6)
- a. 0.02
  - b.  $\frac{2}{5}$
  - c. 1.5
- B. 6 carpenters working 8 hours a day can make 24 tables in 20 days. In how many days 12 carpenters working 6 hours a day will make 36 tables (6)

**OR**

- I. Find the compound interest of Rs. 1200 at the rate of 12% p.a. for 2 years, if the interest is paid quarterly. Given  $1200 (1.03)^8 = 1513$  (6)
- II. Find the amount of ordinary annuity, if the payment of Rs. 2000 made at the end of every quarter for 10 years at the rate of 8% per year compounded annually. Given  $(1.02)^{40} = 2.2080$  (6)