



Register Number:

Date:

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27

BBA - I SEMESTER

SEMESTER EXAMINATION: OCTOBER 2019

BBA 1319 – QUANTITATIVE TECHNIQUES - I

Time- 2 1/2 hrs

Max Marks-70

This paper contains 2 printed pages and four parts

Section A

Answer any 5 of the following questions

5 x 2 = 10

1. If a number is increased by 60 % of itself, it gives 336. What is the number?
2. If Rs. 6,000 is invested in a savings bank account for 5 years at 8 % rate of interest and the interest is compounded semi-annually, find
 - a) The amount accumulated at the end of 5 years and
 - b) The interest earned from the investment.
3. Find the determinant of the following matrix
$$A = \begin{vmatrix} 7 & 5 & 9 \\ 3 & 8 & 4 \\ 6 & 2 & 1 \end{vmatrix}$$
4. Solve the following equation: $3x^2 - x - 10 = 0$
5. Find the value of m, if $3/5$, m and $5/3$ are in GP
6. Find the 51st term of an AP whose first term is -70 and the common difference is $5/2$

Section B

Answer any 3 of the following questions

3 x 5 = 15

7. The students of a school belong to different states. The number of Karnataka students is 288, the number of Andhra Pradesh students is 252, the number of Tamil Nadu students is 144 and the number of Kerala students is 72. Find the ratio of
 - (a) the number of Karnataka students to the number of Kerala students.
 - (b) the number of Andhra Pradesh students to the total number of students and
 - (c) the total number of Karnataka and Kerala students to the total number of Andhra Pradesh and Tamil Nadu students. $(1 + 2 + 2)$
8. A person needs Rs, 3,00,000 after 6 years for the higher education of his daughter. He wishes to deposit a certain amount at the end of each year from now for 6 years

to accumulate the above said amount. If the rate of interest is 12 % per annum compounded annually, how much is each annual payment?

9. A motor car travels a distance of 84 kms. On the return journey the speed increases by 4 kms/hr and the car reaches its origin $\frac{1}{2}$ hr earlier. Find the initial speed of the car.
10. Find three numbers in an AP whose sum is 27 and their product is 648

Section C

Answer any 2 of the following questions

2 X 15 = 30

11. a) Ravish sold his motorcycle to Vineet at a loss of 28%. Vineet sold the motorcycle to Rahul for Rs.35910, thereby making profit of 12.5%, find the cost price of the motorcycle for Ravish.

b) Find the present value of a sequence of annual payments of Rs. 6,000 each, the first being made at the end of 5 years and the last at the end of 12 years, if the interest is calculated 8 % (i) semi-annually and (ii) Quarterly. (8 + 7)

12. a) A firm produces two products A and B using three plants P1, P2 and P3. During the month of August, P1 produced 140 units of A and 70 units of B; P2 produced 90 units of A and 120 units of B and P3 produced 200 units of A and 170 units of B. During the month of September, P1 produced 140 units of A and 70 units of B; P2 produced 190 units of A and 140 units of B and P3 produced 200 units of A and 170 units of B. Find the total production of these products for the two months

b) Solve the following system of linear equations using Cramer's rule:

$$X - 2y = 2 \quad \text{and} \quad x + y = 5 \quad (8 + 7)$$

13. a) Insert three geometric means between $\frac{3}{49}$ and 147

b) There were 520 labours in a company. Daily wages were Rs. 200 for men and Rs. 100 for women. Total wage paid in a day is Rs. 70,000. Find the number of male and female labours in the company. (8 + 7)

Section D

Compulsory Question

1 X 15 = 15

14. a) Mr. X sold an article for Rs. 2,000 and got a profit of Rs. 10 %. What is the cost price of the article

b) If $A = \begin{pmatrix} 2 & 3 \\ 1 & 2 \end{pmatrix}$ then show that $A^2 - 5A - 2I = O$

c) A man is employed in a company on Rs. 16,000 per month and is promised an increment of Rs. 500 per year on his monthly salary. Find the total amount which he receives in 12 years

d) Solve the following equation for x:

$$\frac{x+5}{3} = \frac{x+2}{4} + 2$$

e) At what rate converted annually will the present value of a perpetuity Rs. 2500 at the end of each year be Rs, 1,00,000
