



Register Number:

DATE:

**ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27**  
**B.COM. – I SEMESTER**  
**SEMESTER EXAMINATION: OCTOBER 2019**  
**BSF 1319 - QUANTITATIVE TECHNIQUES**

**Time- 2 1/2 hrs**

**Max marks -70**

**This paper contains 2 printed pages and 4 parts**

**SECTION A**

**I. Answer any five of the following questions**

**2X5=10marks**

1. Find  $x$ .  $25\%$  of  $900 - x\%$  of  $250 = 30\%$  of  $500$ .
2. When  $142$  is added to a number, the result is  $64$  more than three times the number. Find the number.
3. Find the effective rate of interest corresponding to the nominal rate of  $16\%$  p.a., compounded quarterly.
4. Binny is a merchant who has faulty weights. Instead of  $1\text{kg}$ , the weight is  $1100$  grams. What is Binny's loss because of the faulty weights?
5. Find  $X - Y$ .  $X = \begin{bmatrix} -1 & 7 \\ 3 & 4 \end{bmatrix}$  and  $Y = \begin{bmatrix} 2 & 8 \\ 5 & -6 \end{bmatrix}$
6. What is the  $20^{\text{th}}$  term of the AP:  $102, 106, 110, \dots$ ?

**SECTION B**

**II. Answer any three of the following questions**

**5x3=15marks**

7. Find  $A \cdot B^t$  and  $A^t \cdot B$

$$A = \begin{bmatrix} 1 & 3 \\ 4 & 2 \end{bmatrix} \quad B = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$$

8. a) Find the mean proportional to  $50$  and  $2$   
b) Find the third proportional to  $25$  and  $50$   
c) Find the value of  $x$  if:  $(x-3):(5+2x)::4:7$   
d) Find the ratio of  $4$  days to  $16$  hours
9. Radha wants to buy a house after  $5$  years, when it is expected to cost you Rs.  $50,00,000$ . How much should she save annually to buy the house if savings earn a compound return of  $14\%$  p.a.

10. The difference between SI and CI on a certain sum of money is Rs 24 for 4 years at 2% .Find the sum.

### SECTION C

III. Answer any TWO of the following questions

15X2=30marks

11. a) A train has to reach its destination 360 km away. If the speed is increased by 30km/hr, the train can reach 1 hour earlier. Find both speeds.

b) 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?

c) The daily income of Ram and Tam in the ratio 2 : 3 . If the income increases by Rs 50 each , the new ratio becomes 5: 7. What is the initial value.

(5+5+5)

12. a) How many terms are there in an arithmetic progression whose first and fifth terms are -14 and 2 respectively and the sum of the terms is 40.

b) The 4<sup>th</sup> element of a geometric progression is 27 and  $T_7 = 729$ . Find the GP.

c) Solve the equation :  $m^2 + 2m - 15 = 0$

(8+5+2)

13. a) A refrigerator was marked 40% above the cost price and then a further discount of 30% was given on the marked price. Find the percentage of gain/loss.

b) 10 men working 8 hours per day can complete a job in 21 days. How many days will 15 men working 4 hours a day take?

c) Find the greatest number that can divide 284,698 and 1618.

(5+5+5)

### SECTION D

IV. Compulsory question

1 x 15 = 15

14. a) Find the inverse of  $B = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \\ 1 & 4 & 9 \end{bmatrix}$  (10)

b) find the sum of the series :  $9 + 99 + 999 + \dots$  To the nth term . (5)