

I Semester B.Com. Examination, December 2006
(Semester Scheme)
COMMERCE
Business Mathematics

Time : 3 Hours

Max. Marks : 90

Instruction: Answer should be written **completely** either in **English** or in **Kannada**.

SECTION - A

Answer **any 10** sub-questions. **Each** question carries **2** marks : **(10×2=20)**

1. a) What are imaginary numbers ?
- b) Find the H.C.F. of 667 and 437.
- c) If $B = \begin{bmatrix} 2 & 4 \\ 1 & 6 \end{bmatrix}$, find $\frac{1}{2} B^2$.
- d) What is a Scalar matrix ?
- e) What is Banker's gain ?
- f) Define an equation.
- g) Find the 15th term of an A.P. 1, 3, 5.
- h) What is a ratio ?
- i) Find the roots of the equation $x^2 - 3x - 10 = 0$.
- j) If $A = \begin{bmatrix} 2 & 3 \\ 1 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & -3 \\ -1 & 3 \end{bmatrix}$, find $A + B$.
- k) Give the meaning of null matrix.
- l) What do you mean by present value of a bill ?

P.T.O.

SECTION - B

Answer **any 5** questions. **Each** question carries **5** marks :

(5×5=25)

2. Solve for B

$$\frac{B+1}{2} - \frac{B-2}{3} = \frac{B+4}{5} + \frac{7}{15}$$

3. If $A = \begin{bmatrix} 9 & 1 \\ 4 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 5 \\ 7 & 12 \end{bmatrix}$, find a matrix X such that $2A + 5B + 2X = 0$.

4. The sum of two integers in AP is 15 and their product is 80. Find them.

5. The age of the father is 4 times that of his son. Five years ago father was 7 times as old as his son. Find their present age.

6. Solve by the method of elimination

$$2x - 3y = 19$$

$$3x + 2y = 9$$

7. If the bankers gain on certain bill due 6 months is Rs. 10, and the rate of interest 10% p.a., find the face value of the bill.

8. In a boarding house of 50 members the total monthly miscellaneous expenses were increased by Rs. 76. When the number of boarders increased by 14, the average monthly miscellaneous expenses were therefore reduced by one rupee per head. Find the original rate of miscellaneous expenses per head, per month.

9. If $A = \begin{bmatrix} 4 & 2 \\ 6 & 4 \end{bmatrix}$, and $B = \begin{bmatrix} 8 & 4 \\ 6 & 2 \end{bmatrix}$ show that $(A - B)' = B' A'$.

SECTION - C

Answer **any three** questions. **Each** question carries **15** marks :

(3×15=45)

10. a) Sum of three consecutive terms in A.P. is 54 and the product of two extremes is 275. Find the numbers.

b) Find the 10th term of the sequence 3, 5, 7, 9.....

11. a) A machine listed at Rs. 625 was sold at a discount of 15%. Find the discount and the net price.

b) A sum of money amounts to Rs. 855 in $3\frac{1}{2}$ years at the rate of 4% p.a. simple interest. Find the sum.

12. a) Using Cramer's rule solve the following equations for x and y.

$$x - 16 = 2y$$

$$3x - 1 = -y$$

b) Using formula method solve the following $5(x - 2)^2 - 6 = -13(x - 2)$.

13. a) If $A = \begin{bmatrix} 2 & 4 & 7 \\ 9 & 0 & -3 \\ -6 & 8 & -5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 2 & 5 \\ 3 & 7 & 9 \\ 4 & -2 & -7 \end{bmatrix}$. Find $4A + 2B$.

b) Given that $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ 1 & 2 & 3 \end{bmatrix}$ verify $(5A)' = 5A'$.

14. a) The Banker's gain on a bill due 6 months is Rs. 40 and the rate of interest being 20% p.a. Find the face value of the bill.
- b) Mahesh spends 20% of his income for rent and $\frac{2}{3}$ of the remainder for other expenses. If he saves Rs. 133.35 per month, find the monthly income.

ಕನ್ನಡ ರೂಪಾಂತರ

ವಿಭಾಗ-ಎ

ಯಾವುದಾದರೂ 10 ಉಪಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಿಸಿ. ಪ್ರತಿ ಉಪಪ್ರಶ್ನೆಗೆ 2 ಅಂಕಗಳು.

(10×2=20)

1. a) ಉಹ್ಯ ಸಂಖ್ಯೆಗಳೆಂದರೇನು ?
- b) 667 ಮತ್ತು 437 ರ ಮ.ಸಾ.ಅ.ವನ್ನು ಕಂಡುಹಿಡಿಯಿರಿ.
- c) $B = \begin{bmatrix} 2 & 4 \\ 1 & 6 \end{bmatrix}$ ಆದರೆ $\frac{1}{2} B^2$ ನ್ನು ಕಂಡುಹಿಡಿಯಿರಿ.
- d) ಅಡ್ಡ ಪಟ್ಟಿ ಕೋಶ ಎಂದರೇನು ?
- e) ಬ್ಯಾಂಕರನ ಗಳಿಕೆ ಎಂದರೇನು ?
- f) ಸಮೀಕರಣ ಎಂದರೇನು ?
- g) 1, 3, 5 ಸಮಾನಾಂತರ ಶ್ರೇಣಿಯ 15ನೇ ಸಂಖ್ಯೆಯನ್ನು ಕಂಡುಹಿಡಿಯಿರಿ.
- h) ಪ್ರಮಾಣ ಎಂದರೇನು ?
- i) $x^2 - 3x - 10 = 0$, ಇದರ ಮೂಲಗಳನ್ನು ತಿಳಿಸಿ.
- j) $A = \begin{bmatrix} 2 & 3 \\ 1 & -1 \end{bmatrix}$ ಮತ್ತು $B = \begin{bmatrix} 0 & -3 \\ -1 & 3 \end{bmatrix}$ ಆದರೆ $A + B$ ಎಷ್ಟು ?