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(21216) Roll No. ....  
B.B.A.-I Sem.

18037

B.B.A. Examination, Dec. - 2016

BUSINESS MATHEMATICS

(BBA-102)

(New)

Time : Three Hours ] [Maximum Marks : 75

Note : Attempt questions from all sections as per instructions.

Section-A

(Very Short Answer Questions)

Note : Attempt all the five questions of this section. Each question carries 3 marks. Very short answer is required.  $3 \times 5 = 15$

P.T.O.

1. Explain Diagonal matrix and Identify matrix with example.
2. Find the minors and cofactors of the following matrix :

$$A = \begin{vmatrix} 2 & 3 \\ 5 & 4 \end{vmatrix}$$

3. The ratio of two numbers in the lowest form is 11:9. If the sum of numbers is 40. Find the numbers.
4. If  ${}^n P_3 = 20 \times {}^n P_2$ , find n.
5. Integrate  $\int \frac{1}{b^2 + a^2 x^2} dx$

18037/2

## Section-B

### (Short Answer Questions)

**Note :** This section contains three questions, attempt any **two** questions. Each question carries  $7\frac{1}{2}$  marks. Short answer is required.  $7\frac{1}{2} \times 2 = 15$

6. If  $y = x^3 - x^2 - 16x + 16$ , then find the maxima and minima of the function  $y$ .
7. Explain simple interest and compound interest. Find the rate of interest of a sum that becomes triple of itself in 12 years on simple interest.
8. Define rank of a matrix. Find the rank of

$$\text{matrix } A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \\ 2 & 3 & 1 \end{bmatrix}.$$

## Section-C

### (Detailed Answer Questions)

**Note :** This section contains five questions, attempt any **three** questions. Each question carries 15 marks. Answer is required in detail.  $15 \times 3 = 45$

9. (a) Using matrix method, solve the following system of linear equation :  $7\frac{1}{2}$

$$6x + 7y + 2 = 0$$

$$4x + 3y + 6 = 0$$

- (b) Find the Inverse of the matrix:  $7\frac{1}{2}$

$$A = \begin{bmatrix} 1 & 2 & 5 \\ 2 & 3 & 1 \\ -1 & 1 & 1 \end{bmatrix}$$

10. Solve the following equations by Gauss elimination method:

$$x + 3y + 6z = 2$$

$$3x - y + 4z = 9$$

$$x - 4y + 2z = 7$$

11. (a) A candidate secures 25% in an examination but fails by 30 marks. While the other candidate who secures 50 marks get 20 marks more than the minimum passing marks. Find the minimum passing percentage.
- (b) The 5<sup>th</sup> term of Arithmetic series is 21 and 11<sup>th</sup> term of Arithmetic series is 39, then find first term, common difference, and sum of 55<sup>th</sup> terms of series.

12. (a) If  $A = \{1, 2, 3, 4\}$ ,  $B = \{2, 3, 4, 5\}$  and  $C = \{3, 4, 5, 6\}$

then prove that

$$A \cap (B \cap C) = (A \cap B) \cap C$$

and  $A \cup (B \cup C) = (A \cup B) \cup C$

- (b) Find  $n$ , if

(i)  ${}^n C_7 = {}^n C_9$

(ii)  ${}^{24} C_{n+5} = {}^{24} C_{3n-1}$

(iii)  ${}^{2n} C_2 : {}^n C_3 = 9:2$

13. (a) If  $Y = \frac{x-4}{2\sqrt{x}}$ , then find

$$\frac{dy}{dx} \text{ at } x=4$$

(b) Prove that

$$\int_0^{\pi/2} \frac{\sqrt{\sin x}}{\sqrt{\sin x + \sqrt{\cos x}}} dx = \frac{\pi}{4}$$