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B.B.A.-I Sem.

(Printed Pages 7)

Roll No. ....

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 $^nP_4 = 20 \times {}^nP_2$, find n.

5. Integrate $\int \frac{1}{b^2 + a^2x^2} dx$

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Section-B

(Short Answer Questions)

Note : This section contains three questions, attempt any **two** questions. Each question carries 7½ 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

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 : 7½

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

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

(b) Find the Inverse of the matrix: 7½

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

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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 5th term of Arithmetic series is 21 and 11th term of Arithmetic series is 39, then find first term, common difference, and sum of 55th 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 $Y = \dfrac{x-4}{2\sqrt{x}}$, then find

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

P.T.O.

(b) Prove that

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

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