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(21213) Roll No.

BBA-Ist Sem.

NP-3040

B.B.A. Examination, Dec. 2013

Mathematical Foundation for Business

Administration

(BBA-103)

(Old Course-I)

Time : Three Hours] [Maximum Marks : 75

Note: Attempt all sections as per instructions.

Section - A

Note: Attempt all questions. Each question carries 3 marks.

1. Suppose Babu Singh wants to buy a car after 5(five) years when it is expected of cost Rs. 4,00,000. How much should he save annually is his saving earn a compound return of 15%. 3

P.T.O.

2. If A and B are two sets such that $n(A) = 27$, $n(B) = 35$ and $n(A \cup B) = 50$.

Find $n(A \cap B)$ 3

3. Find the derivative of the following function

$$y = (\log x)^{\sin x} \quad 3$$

4. Do the following limit exists? If yes find them

$$\lim x \sin 1/x \quad 3$$

5. Show that the matrix

$$A = \begin{bmatrix} \cos \theta & 0 & \sin \theta \\ 0 & 1 & 0 \\ -\sin \theta & 0 & \cos \theta \end{bmatrix} \text{ is orthonal.} \quad 3$$

Section-B

Note: Attempt any two questions. Each question carries 7.5 marks.

6. If $A = \begin{bmatrix} 1 & 1 & -1 \\ -2 & 3 & -4 \\ 3 & -2 & 3 \end{bmatrix}$, $B = \begin{bmatrix} -1 & -2 & -1 \\ 6 & 12 & 6 \\ 5 & 10 & 5 \end{bmatrix}$,

Prove that $AB = 0$ but $BA \neq 0$. 7.5

7. Evaluate $I = \int \frac{1}{\sqrt{1 + \sin x}} dx$ 7.5

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8. Prove that 7.5

$$\nabla = \Delta E^{-1} = E^{-1} \Delta = I - E^{-1}$$

Section-C

Note: Attempt any **three** questions. Each question carries 15 marks.

9. (a) Find $\frac{dy}{dx}$ when ; $x = \frac{3at}{1+t^3}$, $y = \frac{3at^2}{1+t^3}$. 7½

(b) Evaluate $\int_0^1 \sin^{-1} x \cdot dx$ 7½

10. (a) Prove the following identities 7½

$$\begin{vmatrix} x & y & z \\ x^2 & y^2 & z^2 \\ x^3 & y^3 & z^3 \end{vmatrix} = zyz(x-y)(y-z)(z-x)$$

(b) The following table is given 7½

x :	0	1	2	3	4
f(x) :	3	6	11	18	27

What is the form of function f(x) by Newton Interpolation formula.

11. (a) Prove that the maximum value of $\sin x + \cos x$ is $\sqrt{2}$ 7½

(b) From a pack of 52 cards, two cards are drawn at random. Find the Probability that one is king and other a queen. 7½

12. (a) To prove that ${}^n C_r + {}^n C_{r-1} = {}^{n+1} C_r$ 7½

(b) ${}^n P_4 = 20 \times {}^n P_2$ find n. 7½

13. (a) A survey shows that 73% of the Indians like apples, where as 65% like oranges. What percentage of Indians like both apples and oranges. 7½

(b) If $A = \begin{bmatrix} 1 & 2 & 5 \\ -1 & 3 & -4 \end{bmatrix}$ &

$B = \begin{bmatrix} 3 & -2 & 1 \\ 0 & -1 & 4 \\ 5 & 2 & -1 \end{bmatrix}$ find AB. 7½