

**E 6974**

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Reg. No.....

Name.....

**B.B.A. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2013**

**First Semester**

**Complementary Course—FUNDAMENTALS OF BUSINESS MATHEMATICS**

(2013 Admission)

Time : Three Hours

Maximum : 80 Marks

**Part A**

*Answer all questions.  
Each question carries 1 mark.*

1. If  $A = \{3, 4, 8\}$ ,  $B = \{1, 0, 3\}$ , find  $A - B$ .
2. Define a composite number.
3. Which is the smallest prime number ?
4. Find the 7<sup>th</sup> term of the series 2, 4, 8, ....
5. Find the value of  $5P_2$ .
6. The  $n^{\text{th}}$  term of an A.P. is  $2n + 1$ . Find the A.P.
7. Find  $x$  if  $\log_5 x = 3$ .
8. If  $12x = 5y$  find  $x : y$ .
9. If  $P = \begin{Bmatrix} 1 & 2 & 8 \\ 3 & 4 & 9 \end{Bmatrix}$  find  $A^T$ .
10. If  $A = \{4, 5\}$  find  $A \times A$ .

(10 × 1 = 10)

**Part B**

*Brief Answer Questions.  
Answer any eight questions.  
Each question carries 2 marks.*

11. Find  $X$  such that  $P - Q + X = 0$ . Where  $P = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$   $Q = \begin{bmatrix} -1 & -2 \\ 0 & 4 \\ 3 & 1 \end{bmatrix}$

**Turn over**

12. Simplify  $\log_2 32 + \log_2 16 - \log_2 \frac{1}{8}$ .
13. P.T.  $\sqrt{3}$  is irrational.
14. Find the compound interest for Rs. 5,000 for 2 years at 10% p.a.
15. Find the present value of Rs. 1,000 due after 5 years compounded annually at the rate of 10%.
16. Define Transpose of a matrix with example.
17. If  $P = \{1, 2, 3\}$   $Q = \{a, b\}$ . Verify whether  $P \times Q = Q \times P$ .
18. Find the power set of  $Q = \{a, b, c\}$ .
19. How many diagonals have a polygon of 6 sides ?
20. Find the sum of all natural numbers from 1 to 200 excluding those divisible by 5.
21. Find  $r$  if  ${}^9C_{r+1} = {}^9C_{2r-1}$ .
22. 5 men can dig a well in 12 days. In how many days 12 men can dig the well ?

(8 × 2 = 16)

### Part C

*Short Essay Type.*

*Answer any six questions.  
Each question carries 4 marks.*

23. If  $A = \begin{bmatrix} 1 & 2 & 0 \\ 0 & 3 & 0 \\ 1 & 1 & 4 \end{bmatrix}$  P.T.  $AA^{-1} = A^{-1}A = I$ .

24. Among 60 people, 35 can speak English, 40 in Malayalam and 20 can speak both the languages. Find the number of people who can speak at least one of the languages ? How many cannot speak in any of these languages ?

25. P.T.  $\begin{bmatrix} 3 & 4 & 2 \\ 0 & 1 & -3 \\ 2 & -2 & 8 \end{bmatrix}$  is non-singular.

26. How many ways can a person invite one or more of his 6 friends ?

27. Insert 5 H.M's between  $\frac{1}{5}$  and  $\frac{1}{2}$ .
28. P.T.  $\log_y x \times \log_z y \times \log_x z = 1$ .
29. If  $12x = 5y$  find  $x : y$ .
30. Ages of two people are in the ratio 3 : 4. After 10 years their ages would be in the ratio 4 : 5. Find their ages.
31. Find  $n$  if  $nP_4 = 12$ .  $nP_2$ .

(6 × 4 = 24)

**Part D**

*Answer any two questions.  
Each question carries 15 marks.*

32. Solve the equation using Matrices.

$$5x - 6y + 4z = 15$$

$$7x + 4y - 3z = 19$$

$$2x + y + 6z = 46.$$

33. Find the sum to  $n$  forms of the series.

$$7 + 77 + 777 + \dots$$

34. Each student in a class of 40, studied at least one of the Languages Malayalam, Hindi and French, 16 studied Malayalam, 22 French, 26 Hindi, 5 studied Malayalam and French ; 14 Hindi and French ; 2 Malayalam, Hindi and French. Find the number of students who studied Malayalam and Hindi but not French.

35. If  $A = \{a, b\}$ ,  $B = \{p, q\}$   $C = \{q, r\}$  verify  $A \times (B \cup C) = (A \times B) \cup (A \times C)$ .

(2 × 15 = 30)