

E 9830

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Reg. No.....

Name.....

B.B.A. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2014

First Semester

Complementary Course—FUNDAMENTALS OF BUSINESS MATHEMATICS

(2013 Admission onwards)

Time : Three Hours

Maximum : 80 Marks

Part A (Short Answer Questions)

Answer all question.
1 mark each.

1. Define a set ?
2. If $A = \{2, 3, 4\}$ $B = \{3, 4, 8\}$ find $A \cup B$?
3. Define a prime number.
4. Which is the smallest natural number ?
5. Divide 240 in the ratio 5 : 1.
6. Find the mean proportion of 3 and 12 ?
7. If $A = \begin{Bmatrix} 1 & 2 & 3 \\ 5 & 6 & 7 \end{Bmatrix}$ and $B = \begin{Bmatrix} 2 & 0 & 5 \\ 1 & 0 & 3 \end{Bmatrix}$, find $2A + B$.
8. Find the 7th term of the series 1, 4, 7,
9. Find the value of ${}^{10}C_3$?
10. Find the 5th term of $\frac{1}{3}, \frac{1}{5}, \frac{1}{7}, \dots$

(10 × 1 = 10)

Part B (Brief Answer Questions)

Answer any eight questions.
2 marks each.

11. Find all subsets of A if $A = \{p, q, r\}$.
12. If $\frac{a}{b} = \frac{c}{d} = \frac{5}{3}$ prove that $\frac{ad}{bc} = 1$.

Turn over

13. How many diagonals have a polygon of 5 sides ?
14. The sum of 3 integers in A.P. is 21 and product is 280, find the numbers.
15. Find the compound interest for Rs. 10,000 /- for 3 years at 5 % p.a.
16. If $P = \begin{bmatrix} -1 & 0 & 1 \\ 2 & 1 & 3 \end{bmatrix}$, $Q = \begin{bmatrix} -5 & 6 & 3 \\ 2 & 1 & 8 \end{bmatrix}$ find $P^2 + 2P + Q$.
17. Simplify $\log_2 16 + \log_2 32 - \log_2 \frac{1}{8}$.
18. Find X such that $A + B - X = 0$ where $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix}$, $B = \begin{bmatrix} -1 & -2 \\ 0 & 4 \\ 3 & 1 \end{bmatrix}$.
19. Prove that $\sqrt{2}$ is not a rational number.
20. Find the present value of Rs. 800 due after 5 years compounded annually at the rate of 8 %.
21. Define the rank of a matrix. Find the rank of $\begin{bmatrix} 3 & 6 \\ 8 & 1 \end{bmatrix}$.
22. If $A = \{1, 2, 3\}$, $B = \{a, b\}$,
Verify $A \times B = B \times A$ or not ?

(8 × 2 = 16)

Part C (Short Essay Type)

Answer any **six** questions.
4 marks each.

23. If $A = \{1, 2, 3\}$, $B = \{2, 3, 4, 5\}$ $C = \{2, 4, 6, 8\}$. Find

(i) $(A \cap B) \cup C$. (ii) $(A - B) \cup C$. (iii) $(A \cup B)'$.

24. Find the additive inverse of

$$\begin{bmatrix} -3 & 1 & 6 \\ 4 & -7 & 6 \\ 2 & 8 & -2 \end{bmatrix}$$

25. Find in how many ways a cricket team containing 11 players. Can be formed 15 high class players available ?
26. Find the Geometric mean between 4 and 16.
27. Evaluate using logarithm $\frac{(25.34)^2}{(424)^{\frac{2}{5}}}$.
28. A man can complete a job in 12 days. How many days will it take for 6 men to complete the same job ?
29. If ${}^xC_{16} = {}^xC_5$ find x ?
30. Explain the term permutation with an example.
31. Solve $\log_8 x + \log_4 x + \log_2 x = 11$.

(6 × 4 = 24)

Part D (Long Essays)

Answer any **two** questions.
15 marks each.

32. Find sum to n terms of the series

$$8 + 88 + 888 + \dots$$

33. Solve by Cramer's Rule.

$$5x - 6y + 4z = 15, 7x + 4y - 3z = 19, 2x + y + 6z = 46.$$

34. Find the Total amount of an annuity of Rs. 2,400 payable at the end of every quarter for 6 years at 10 % compounded quarterly ?
35. Use logarithm to find out :

$$\frac{\sqrt[3]{19.41} \times 4.62 \times (1.783)^{-\frac{2}{3}}}{\sqrt[7]{1.436}}$$

(2 × 15 = 30)