

E 2564

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Reg. No.....

Name.....

B.B.A. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2015

First Semester

Complementary Course—FUNDAMENTALS OF BUSINESS MATHEMATICS

(2013 Admission onwards)

Time : Three Hours

Maximum : 80 Marks

Part A

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

1. Define Sets.
2. Explain Prime numbers.
3. If $A = \begin{bmatrix} 5 & 6 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} -5 & -1 & 0 \end{bmatrix}$, find $A - B$.
4. Find the 6th term of the series 1, 3, 5,
5. Find the AP, if the n^{th} term of A.P. is $2n - 1$.
6. If $12x = 7y$, find $x : y$.
7. Find the value of ${}^{12}P_2$.
8. If $A = \begin{bmatrix} -2 & 1 \end{bmatrix}$, find A^2 .
9. What are Determinants ?
10. List the major types of matrices.

(10 × 1 = 10)

Part B

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

11. Find the compound interest for Rs. 19,500 for 3 years at 10.5 % p.a.
12. If $A = \{1, 4\}$, $B = \{4, 5\}$ and $C = \{5, 7\}$, find and $(A \times B) \cup (A \times C)$ and $(A \times B) \cap (A \times C)$.
13. Differentiate Permutation and Combination.
14. Given that $X = \begin{bmatrix} 1 & -2 & 1 \\ 0 & 4 & 2 \\ 1 & 4 & 3 \end{bmatrix}$, $Y = \begin{bmatrix} 1 & -1 & -1 \\ 0 & 5 & 4 \\ 1 & 7 & 3 \end{bmatrix}$ and $A - X - Y = 0$, find A.
15. Prove that $\sqrt{3}$ is irrational.

Turn over

16. Find the power set of $K = \{x, y, z\}$
17. Explain Transpose of a matrix and its major properties.
18. Find the present value of Rs.1, 250 due after 4 years compounded annually @ 9 %.
19. Explain about Harmonic Progression with an example.
20. Find the sum of all natural numbers from 1 to 300 excluding those divisible by 7.
21. Four persons enter a railway compartment in which there are 6 seats. In how many ways, they can take their places ?
22. Explain rank of a matrix.

(8 × 2 = 16)

Part C

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

23. Differentiate A.P. and G.P. with proper examples.
24. Differentiate rational and irrational numbers.
25. Explain in detail the depreciation and annuities.
26. Explain the Cartesian product of two sets.
27. Find the inverse of $A = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$.
28. Show that $P = \begin{bmatrix} 1 & -1 & 4 \\ -1 & 1 & 8 \\ 3 & -4 & 1 \end{bmatrix}$ is not a singular matrix.
29. In how many ways can a cricket team of 11 players choose a captain and vice-captain from amongst themselves ?
30. Ages of two employees in a factory in same grade are in the ratio 4 : 5. After 8 years, their ages would be in the ratio 5 : 6. Find their ages.
31. Out of 500 car owners investigated, 400 owned Fiat cars and 200 owned Ambassador cars. 50 owned both Fiat and Ambassador cars. Is this data correct ?

(6 × 4 = 24)

Part D

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

32. Solve the given set of linear equations using Matrix Method :

$$x - 3y + z + 1 = 0$$

$$2x + y - 4z + 1 = 0$$

$$6x - 7y + 8z - 7 = 0.$$

33. If $A = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 1 & 2 \\ 3 & 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 9 & -12 & 9 \\ 11 & 4 & -3 \\ -5 & 2 & 9 \end{bmatrix}$, find : (a) $A + B$, (b) $A - B$ and (c) prove that

$$AB \neq BA..$$

34. In how many ways , we can make selection of 5 books from 12 books , when

- (a) When one particular book is never included, and
- (b) When one particular book is always included.

35. In a certain government office, there are 400 employees: there are 150 men, 276 university graduates, 212 married persons, 94 male university graduates, 151 married university graduates, 19 married men, 72 married male university graduates. Find the number of single women who are not university graduates.

$$(2 \times 15 = 30)$$