

E 6178

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Reg. No.....

Name.....

B.B.A. DEGREE (C.B.C.S.S.) EXAMINATION, NOVEMBER 2018

First Semester

Complementary Course—FUNDAMENTALS OF BUSINESS MATHEMATICS

[2013 to 2016 Admissions]

Time : Three Hours

Maximum Marks : 80

Part A

Answer all questions.

Each question carries 1 mark.

1. Explain Set Theory.
2. Explain natural numbers.
3. If $P = [-5 -6 -8]$ and $Q = [-5 -10]$, find $P - Q$.
4. Find the 4th term of the series 1, 3, 5,
5. Find the AP, if the nth term of A.P. is $2n-3$.
6. If $14x = 5y$, find $x : y$.
7. Find the value of 7C_2 .
8. If $A = [-11]$, find A^2 .
9. Define rank of a matrix.
10. What do you mean by linear equations ?

(10 × 1 = 10)

Part B

Answer any eight questions.

Each question carries 2 marks.

11. Find the compound interest for Rs. 10,500 for 10 years at 11.5% p.a.
12. If $A = \{1, 2\}$, $B = \{2, 5\}$ and $C = \{5, 7\}$, find $(A \times B) \cup (A \times C)$ and $(A \times B) \cap (A \times C)$.
13. Differentiate Permutation and Combination.

14. Given that $P = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 1 \\ 1 & 4 & 1 \end{bmatrix}$, $Q = \begin{bmatrix} 1 & -1 & -1 \\ 1 & 1 & 4 \\ 1 & 1 & 1 \end{bmatrix}$ and $A - P = Q$, find A.

Turn over

15. Differentiate rational and irrational numbers.
16. Find the power set of $K = \{p, q, r\}$.
17. Explain determinant of a square matrix.
18. Find the present value of Rs. 1,050 due after 6 years compounded annually @ 9.5%.
19. Explain about Geometric Progression with an example.
20. Find the sum of all natural numbers from 1 to 250 excluding those divisible by 5.
21. 5 patients enter a clinic in which there are 7 seats. In how many ways, they can take their places?
22. Find $\log_2 30 + \log_2 14 - \log_2 1/7$.

(8 × 2 = 16)

Part C

Answer any six questions.

Each question carries 4 marks.

23. Differentiate H.P. and G.P. with proper examples.
24. 6 employees can complete a task in 30 hours. In how many hours, 10 employees can complete the same task?
25. Explain the depreciation and annuities and its importance in business management.
26. Explain the Cartesian product of two sets with suitable examples.

27. Prove that $ZZ^{-1} = Z^{-1}Z$, if $Z = \begin{bmatrix} 1 & 3 & -3 \\ 1 & 4 & 3 \\ -1 & 3 & 0 \end{bmatrix}$.

28. Prove that $X = \begin{bmatrix} 1 & -1 & 1 \\ -1 & 1 & 0 \\ 2 & -3 & 1 \end{bmatrix}$ is a non-singular matrix.

29. Find n , if $nP_3 = 6nP_2$.
30. Ages of two employees in a workshop are in the ration 3:5. After 6 years, their ages would be in the ratio 5:6. Find their ages.
31. Out of 400 bike owners investigated, it was found that 300 owned Herobikes and 200 owned Yamaha bikes. 60 owned both Hero and Yamaha bikes. Is this finding correct?

(6 × 4 = 24)

Part D

Answer any two questions.
Each question carries 15 marks.

32. Solve the following set of linear equations :

$$x + y + z = 9.$$

$$2x + 5y + 7z = 52.$$

$$2x + y - z = 0.$$

33. If $A = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 1 & 2 \\ 3 & 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 9 & -12 & 9 \\ 11 & 4 & -3 \\ -5 & 2 & 9 \end{bmatrix}$,

Prove that : (a) $A + B = B + A$, (b) $(A^T)^{-1} = (A^{-1})^T$ and (c) $AB \neq BA$.

34. In a recent survey of 400 drop-out students, 100 were listed as smokers and 150 as chewers of gum : 75 were listed as both smokers and gum chewers. Find out how many of them are neither smokers nor gum chewers..
35. (a) Differentiate Permutation and Combination and its uses in business management with examples
- (b) There are 6 students of which 3 belong to the first year class, 2 belong to second year class and one is from third year. In how many ways, they can stand in a line so that the students from the same class are together ?

(2 × 15 = 30)