

S.D.E.
B.C.A. SEM – I (CBCS - 2018 Course) : SUMMER - 2019
SUBJECT: BUSINESS MATHEMATICS

Day : Tuesday
Date : 07/05/2019

Time: 02.00 PM TO 05.00 PM
Max. Marks: 70

S-2019-4946

N.B.:

- 1) Attempt **ANY FOUR** questions from Section – I and **ANY TWO** questions from Section – II.
- 2) Answers to both the sections should be written in **SAME** answer book.
- 3) Figures to the right indicate **FULL** marks.

SECTION – I

- Q.1** A bag contains 25 balls numbered 1 to 25. Suppose, selection an odd number is considered as success. Two balls are drawn from the bag with replacement. Find the probability of getting: **[10]**
- a) two successes b) at least one success
- Q.2** Compute the inverse of the matrix by cofactor and Adjoint method: **[10]**
- $$A = \begin{bmatrix} 2 & 4 & -1 \\ 3 & 1 & 2 \\ 1 & 3 & -3 \end{bmatrix}$$
- Q.3** If p and q are two statements, then prove that: **[10]**
- a) $\sim (p \leftrightarrow q) \equiv p \leftrightarrow \sim q$
b) $(\sim p \vee q) \wedge (\sim q \vee p) \equiv p \leftrightarrow q$
- Q.4** In a survey concerning the smoking habits of consumers, it was found that 55% smoke cigarette A, 50% smoke B, 42% smoke C, 28% smoke A and B, 20% smoke A and C, 12% smoke B and C and 10% smoke all the three cigarette brands. **[10]**
- a) What percentage of consumers do not smoke?
b) What percentage of consumers smoke exactly two brands of cigarettes?
- Q.5** Write short notes on **ANY TWO** of the following: **[10]**
- a) Bayes Theorem
b) Logic operations
c) Types of functions

P.T.O.

SECTION – II

- Q.6** a) In how many ways the letters of the word below given be arranged so that vowels are always together [08]
i) MISSISSIPPI ii) EQUATION
- b) Discuss types of Set with suitable example of each type. [07]
- Q.7** a) If $f = \{(2, 4), (3, 6), (4, 8), (5, 10), (6, 12)\}$ [08]
 $g = \{(4, 13), (6, 19), (8, 25), (10, 31), (12, 37)\}$.
Then find: i) $g \circ f$ ii) $f \circ g$ iii) $f \circ f$
- b) Illustrate the concept of 'Conditional Probability'. [07]
- Q.8** a) If A and B are the subsets of the universal set X and $n(X) = 50$, $n(A) = 35$, [08]
 $n(B) = 20$, $n(A' \cap B') = 5$, find:
i) $n(A \cup B)$ ii) $n(A \cap B)$ iii) $n(A' \cap B)$ iv) $n(A \cap B')$
- b) If ${}^{n+1}P_3 = 10 \times {}^{n-1}P_2$ then what is the value of n. [07]

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