CDOE
BACHELOR OF COMPUTER APPLICATIONS (CBCS-2019 COURSE)
B.C.A. SEM-I : WINTER :- 2021
SUBJECT: BUSINESS MATHEMATICS

Day : Friday | Time : 02:00 PM-05:00 PM
Date 11/2/2022 | **W-21513-2021** | Max. Marks: 60

N.B.:

1) Q.4 from Section-I is COMPULSORY.
2) Answer ANY TWO questions from Q. 1, 2, 3 in Section-I.
3) Answer ANY TWO questions from Q. 5, 6, 7 in Section-II.
4) All question CARRY EQUAL marks.
5) Answers to Both the sections to be written in SAME answer book.
6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

a) Show that A = {2 ,3 ,4 ,5} is not a subset of B = {x / x ∈ N, x is even}

b) Consider the function f given by y = 3 x – 7, find its inverse function.

Q.2) Answer the following: (6 Marks X 2 = 12)

a) Prepare the truth table for $(\sim p \wedge \sim q) \rightarrow (p \leftrightarrow r)$

b) Find the inverse of the matrix A if exist, $A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$

Q.3) Explain the following: (6 Marks X 2 = 12)

a) Find the number of words, with or without meaning, that can be formed with the letters of the word 'CHAIR'

b) A husband and wife appeared in an interview for two vacancies in an office. The probability of husband's selection is 1/7 and that of wife's selection is 1/5. Find the probability that

(i) Both are selected.

(ii) Only one of them is selected.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

a) Methods of representing sets

b) Representation of Relations

c) Transpose of a Matrix

d) Permutations with Repetitions

e) General probability

SECTION - II

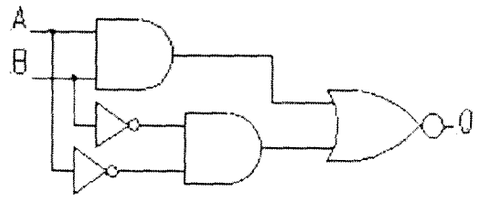
Q.5) Answer the following: (6 Marks X 2 = 12)

a) In a class of 50 students 35 students play football, 25 students play both football as well as cricket. All the students play at least one of the two games. How many students play only cricket? (Use appropriate method).

b) Find g o f and f o g where $f(x) = x - 5$, $g(x) = x^2 - 1$

Q.6) Answer the following: (6 Marks X 2 = 12)

a) Write a Boolean expression for the output, Q, in terms of the inputs A, B, and C.



b) Find the matrix X,

such that $3A - 2B + 4x = 5C$, where $A=\begin{bmatrix} 2 & 3 \\ 4 & 7 \end{bmatrix}$, $B=\begin{bmatrix} 1 & 3 \\ 4 & 6 \end{bmatrix}$ and $C=\begin{bmatrix} 1 & -1 \\ 0 & 2 \end{bmatrix}$

Q.7) Explain the following: (6 Marks X 2 = 12)

a) How many 3-digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9 which are divisible by 5 and none of the digits is repeated?

b) A manufacturing firm produces T.V. sets in three plants with daily production volume of 250, 500 and 1000 units respectively. According to the experience it is known that the fractions of defective output produced by the three plants are 0.006, 0.009 and 0.010. If a T.V. set is selected from a day's total production and found to be defective. Find out

(i) From which plant the T.V. comes.

(ii) What is the probability that it comes the second plant?

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