Sanjay Ghodawat University, Kolhapur

2020-21

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/00

Year and Program: F.Y. MCA | **School of Computer Applications** | **Department: M.C.A.**

Course Code: MCA101 | **Course Title: Computational Mathematics** | **Semester : I**

Day and Date: | **End Semester Examination** | **Time : 2 Hrs.** **Max Marks : 50**

Instructions:
1) All Questions are compulsory.
2) Use of non-programmable calculator is allowed.
3) Assume suitable data wherever necessary.

		Marks	Bloom's Level	CO
Q.1	**Solve the following (any two)**			
a)	If set A has cardinality n then find the formula for Symmetric Relations that can be defined on A.	8	L1	CO1
b)	Find the inverse of the following matrix by elementary transformation. $$A=\begin{bmatrix}1 & 3 & 3\\ 3 & 0 & 4\\ 2 & 2 & 2\end{bmatrix}$$	8	L1	CO2
c)	Let $A=\{2,3,4,5,7\}, B=\{3,5,6,7\}$ and $C=\{9,2,5,8\}$. i) Find $A-B$ ii) Find $B-C$ iii) Find $(A-B)-C$ iv) Is $A-B=B-A$?	8	L1	CO1
Q.2	**Solve the following (any two)**			
a)	Reduce the following matrix to echelon form and find its rank. $$A=\begin{bmatrix}2 & 3 & -1 & -1\\ 1 & -1 & -2 & -4\\ 3 & 1 & 3 & -2\\ 6 & 3 & 0 & -7\end{bmatrix}$$	8	L3	CO3
b)	Use matrix method to test for consistency of the following equations and if consistent solve them $2x-y+3z=1;\quad 3x+2y+z=3;\quad x-4y+6z=-1.$	8	L3	CO3

c) From a box containing 100 transistors 20 of which are defective, 10 are selected at random. Find the probability that (i) all will be defective, (ii) all are non defective and (iii) at least one is defective. 8 L3 CO4

Q.3 Solve the following (any two)

a) Find the two equations of the lines of regression from the following data 9 L2 CO5

X : 1 2 3 4 5 6 7

Y : 5 9 8 10 11 9 11

Also estimate the value of Y for X=8, then estimate the value of X for this value of Y.

b) From the following data, find the equation of the line of regression of y on x and estimate the most probable value of y when x=9 9 L2 CO5

x: 3 6 5 4 4 6 7 5

y: 3 2 3 5 3 6 6 4

c) Solve the assignment problem by Hungarian method for minimum cost 9 L2 CO6

		Jobs				
		I	II	III	IV	V
Persons	A	11	17	8	16	20
	B	9	7	12	6	15
	C	13	16	15	12	16
	D	21	24	17	28	26
	E	14	10	12	11	15

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