1T00161 - MCA (Sem-I) (R-2020-21) (2 Year Course) / 70621 - Mathematical Foundation for Computer Science I

DATE: 18/07/2022 QP CODE:95925

## **University of Mumbai**

## Examination Second Half 2021 under cluster \_\_ (Lead College: \_\_\_\_\_)

Examinations Commencing from 28<sup>th</sup> March 2022 to 5<sup>th</sup> April 2022

Program: MCA

Curriculum Scheme: MCA ( 2year – 2020 Course)

Examination: M.C.A Semester I

Course Code: MCA11 and Course Name: Mathematical Foundations for Computer Science1
Time: 2 hour 30 minutes

Max. Marks: 80

Q1.			_	10 M 60 17 N	questions.	X TO A I A I WE !	estions are [arks]
1.		•	equal marl	(2) 5) -(2, 12, 0) (3, 12, 12, 12, 12, 12, 12, 12, 12, 12, 12	<u> </u>		larksj
Option A:	$\begin{array}{c c} If V(X) = 1 \\ \hline 9 \end{array}$	then, V(3A	+3) = 1				20,000
•	-		36.67	V X 3 3 3 3	6, 3, 3, 5, V		X 40, V
Option B:	5		200	6,5,5,5,6		76,672,00	
Option C:	12		6899				70 (D)
Option D:	25		2000				<u> </u>
2.	A die is roll	ad 2 times	W/hot is the	probability o	f 2 fives 2		· ·
Option A:	125/216	ed 5 times.	what is the	probability o	1 5 fives!	1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	
Option B:	75/216			40,7,68			
				2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		667	
Option C:	1/216				888		
Option D:	3/216	2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2			70000	D,	
3.	Regression	of won via	2) 20 (B. 20 C) (		3 7 X 20 V	,	
Option A:					1000 P. A.		
	$(y-\bar{y})=$	$D_{yx}(x-x)$					
Option B:	$(x-\bar{x})=$	$b_{xy}(y-y)$			200		
Option C:	$(x-\bar{y})=$						
Option D:	$(y-\bar{x})=$	$b_{xy}(x-\bar{y})$					
ن		A PO					
4. ه	For the follo	owing what	is bivariate	probability d	istribution o	f X and Y,	
	Find $P(X \le$	1)		222			
	Y		2	883	4	5	6
36, 7, 3, 3	$X \sim$			16			
1 0 1 0 1 0 1		0		1/32	2/32	2/32	3/32
22262					4.40	1 /0	
	0	1/16	1/16	1/8	1/8	1/8	1/8
	0 1 2		1/16 1/32	1/8 1/64	1/8 1/64	0	1/8 2/64
	2	1/16	- 2 (2)				
Option A:	1/16	1/16	- 2 (2)				-
Option B:	1/16 7/8	1/16	- 2 (2)				
Option B: Option C:	1 2 1/16 7/8 11/64	1/16	- 2 (2)				-
Option B:	1/16 7/8	1/16	- 2 (2)				-
Option B: Option C: Option D:	1/16 7/8 11/64 1/32	1/16	1/32	1/64			-
Option B: Option C: Option D:	1 2 1/16 7/8 11/64 1/32 The z-test is	1/16 1/32 used when m	1/32	1/64			
Option B: Option C: Option D:  5. Option A:	1 2 1/16 7/8 11/64 1/32 The z-test is greater than	1/16 1/32 used when m	1/32	1/64			-
Option B: Option C: Option D:  5. Option A: Option B:	1 2 1/16 7/8 11/64 1/32 The z-test is greater than less-than 10	1/16 1/32 used when m	1/32	1/64			-
Option B: Option C: Option D:  5. Option A: Option B: Option C:	1 2 1/16 7/8 11/64 1/32 The z-test is greater than	1/16 1/32 used when m	1/32	1/64			-
Option B: Option C: Option D:  5. Option A: Option B:	1 2 1/16 7/8 11/64 1/32 The z-test is greater than less-than 10 greater-than-	1/16 1/32 used when m	1/32	1/64			-
Option B: Option C: Option D:  5. Option A: Option B: Option C:	1 2 1/16 7/8 11/64 1/32 The z-test is greater than less-than 10 greater-than-less-than 25	1/16 1/32 used when m 10	umber of sam	1/64	1/64	0	-
Option B: Option C: Option D:  5. Option A: Option B: Option C: Option D:	1 2 1/16 7/8 11/64 1/32 The z-test is greater than less-than 10 greater-than-less-than 25	1/16 1/32 used when m 10	umber of sam	1/64	1/64	0	-

Option C:	
Option D:	-0.5
7.	Find the probability of constructing a two digit even number using the digits 2,3,4,5,6 if
	repetition of digits is allowed
Option A:	
Option B:	
Option C:	
Option D:	
8.	Suppose A and B are events with $P(A)=0.5$ , $P(B)=0.4$ and $P(A \cap B)=0.3$ find the probability that A or B occurs
Option A:	
Option B:	
Option C:	
Option D:	
9.	The distribution in which mean=85, median=83 and mode=81 will be
Option A:	Symmetrical
Option B:	Positive skewed Positive skewed
Option C:	Negative skewed
Option D:	None of these
10.	Two regression lines are given by the equations $2x + y = 30$ and $3x + 5y = 52$ . Find
	the values of $\bar{x}$ , $\bar{y}$
Option A:	$\bar{x} = 14, \bar{y} = 2$
Option B:	$\bar{x}=12, \bar{y}=1$
Option C:	$\bar{x}=14, \bar{y}=1$
Option D:	$\overline{x}=2$ , $\overline{y}=14$

Q2	Solve any Two						0 Marks]		
	The following table gives the frequency distribution of waiting time of 75 persons at a tick counter to buy a movie ticket.								
A	Waiting time (in minutes)		0-6	0-6 7-13		21-27	28- 34		
	frequency		5	12	18	30	10		
	Compute the Bowley's coefficient of skewness								
B	The art competition has entries from three painters Radha, Meera and Sana.  (i) Radha put in 15 paintings, 4% of her works have won first prize.  (ii) Meera put in 5 paintings, 6% of her works have won first prize.  (iii) Sana put in 10 paintings, 3% of her works have won first prize.  What is the probability (chance) that Radha will win first prize?								
	Monthly demand for transistors is known to have the following probability distribution								
	Demand	7 21	2	3	4	5	6		
	Probability	0.10	0.15	0.20	0.25	0.18	0.12		
C	Cost	10500	11000	11500	12000	12500	13000		
	(ii) Obtain t (iii) Suppose	he the expection the variance of that the cost of tran	t (C) of prod			given by the	e rule C. Find		

<b>Q3.</b>	Solve any Two Qu	estions ou	t of Thr	ee (10	marks	each)	37,30	[20]	Marks]	76. B
A	The Probability that a baby is born a boy is 0.51 A mid-wife delivers 10 babies. Find  (i) The Probability that exactly 4 are male  (ii) The Probability that at least 8 are male									
	Find Spearman's ra	nk correlat	ion for t	he follo	wing d	ata	8888 900		1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	3000
D	Marks in DMBI	64	50	44	4	77 47 4	56	65	59	333
В	Marks in SEPM	80	60	37	5		30	75	44	
C	Suppose that life in hours of a certain type of radio tube is a continuous random variable 2 with p.d.f given by $f(x) = \begin{cases} \frac{100}{x^2} & x \ge 100 \\ 0 & otherwise \end{cases}$ (i) What is the probability that all of the original three tubes in a given set will have be replaced in the first 150 hours of operations? (ii) What is the probability that a tube will last less than 200 hours if it is known the									
	(ii) What is the	probabilit	y that a	tube wi	ill last		n 200 ł	nours if i	t is know	n th
<u></u>	(ii) What is the the tube is still func	probabilit	y that a er 150 h	tube wi	ill last service	?	n 200 l			n th
	(ii) What is the the tube is still functions  Solve any Two Que  Given the following  (i) Mary  (ii) The	estions ou g bivariate ginal distri	y that a er 150 he tof Throprobabil bution of	tube wi ours of ee (10 ity distr	ill last service marks ribution	each)  obtair			t is know  Marks]	n th
	(ii) What is the the tube is still functions  Solve any Two Que  Given the following (i) Margen (ii) The (iii) P(X	probabilit tioning aft estions ou g bivariate ginal distri	y that a er 150 he tof Throprobabil bution of	tube wi ours of ee (10 ity distr	ill last service marks ribution	each)  obtair		[20]		n th
	(ii) What is the the tube is still funce  Solve any Two Que  Given the following  (i) Mar  (ii) The  (iii) P(X	estions ou g bivariate ginal distri conditiona +Y) <4	y that a er 150 horizontal to the tof Thropotabil bution of the distribution of the total	tube wi ours of ee (10 ity distr	marks ribution Y f X giv	each)  obtair	1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	[20]		n th
<b>)4.</b> A	(ii) What is the the tube is still functions  Solve any Two Que  Given the following (i) Margen (ii) The (iii) P(X	estions ou g bivariate ginal distri conditiona +Y) <4	y that a er 150 horizontal tof Throprobabil bution of distribution of the control	tube wi ours of ee (10 ity distr	marks ribution Y f X giv	each)  obtair		[ <b>20</b> ]		rn th
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Ā	(ii) What is the the tube is still functions  Solve any Two Question Given the following (i) Margerian (ii) The (iii) P(X Y Y 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	estions ou g bivariate ginal distri conditiona +Y) <4  0.1  0.2  le gives thats are unif	t of Thr probabil bution of l distribution me numb ormly di	ee (10 ity districtions of a control of cont	marks ribution Y f X giv 2 0.1 0.3 ear acceded over Wed	each) n obtain ven Y= idents a week Thu	1 3 0 0 in a cit	2 1 y during	Marks]	
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