CMR INSTITUTE OF TECHNOLOGY





Internal Assesment Test - II

Sub:	Business Statistics	Code:	20	MBA1	4					
Date:	22/04/2022 Duration: 90 mins Max Marks: 50 Sem: I	Branc	h: M	BA						
					BE					
			Marks	CO	RBT					
	Part A - Answer Any Two Full Questions ($2*20 = 40 \text{ marks}$)									
1 (8	 What is correlation co-efficient? Mention the properties of correlation efficient. 	[03]	CO1	L1						
(b)	The following data relate to marks obtained by 250 students in account and statistics in MBA examination:	untancy	[07]	CO2	L3					
	Subject Mean Variance									
	Accountancy (X) 48 16									
	Statistics (Y) 55 25									
	Co-efficient of correlation $(r) = 0.8$									
	 a) Find the two regression equations b) Estimate the marks obtained by a student in statistics who so marks in accountancy c) Estimate the marks obtained in accountancy when marks in is 65. 									
(c)	Calculate whether there is any correlation between the amount of al	Calculate whether there is any correlation between the amount of allowances [10]								
	and the amount spent on clothes. Use Karl Pearson's method for co									
	determine the probable error and comment on the significance of cor	rrelation.								
	Monthly allowances 1000 1300 1600 2000 2									
	Amount spent on clothes 875 925 1000 1325 1									
2 (a	a) Explain the following terms: (i) Mutually exclusive events (ii) Addi	ition	[03]	CO3	L2					
(1.)	theorem of probability (iii) Union of two events									
(b)		r answer:	[07]	CO3	L4					
	(Given $e^{-0.5} = 0.6065$) No. of errors 0 1 2 3 4									
	Frequency 123 59 14 3 1									
(c)		e imports	[10]	CO5	L3					
	manufactured goods into India for 7 years.	. r								
	Exports (crore) 42 44 58 55 89 98 60									
	Imports (crore) 56 49 53 58 67 76 58									
	Obtain the two regression equations and estimate the imports when e	exports in								
	a year was 70 crore rupees.	1								
3 (8	9 17	tion (iii)	[04]	CO1	L1					
(b)	Spurious correlation A sample of 50 cars each of 2 makes TATA and HYUNDAI is taken	n and	[16]	CO4	L3					
(0)	average running life in years is recorded.	n anu	[10]	004	LJ					
	i) Examine which of these two makes gives higher average life?									
	ii) Examine which of these makes shows greater consistency perforn	mance?								
	11, Daniance which of these makes shows greater consistency perform	mance:								

Life (years)	No. o	of Cars
	TATA	HYUNDAI
0-5	8	6
5 – 10	12	10
10 - 15	17	20
15 - 20	10	12
20 - 25	3	2

Part B - Compulsory (01*10=10 marks)

4 Ten competitors in a beauty contest were ranked by 3 judges X, Y and Z in the following order:

Judge X	1	6	5	10	3	2	4	9	7	8
Judge Y	3	5	8	4	7	10	2	1	6	9
Judge Z	6	4	9	8	1	2	3	10	5	7

Calculate Rank Correlation Coefficient to find out which pair of judges has the nearest approach to beauty.

	Course Outcomes (COs)	P01	P02	P03	P04	P05
CO1:	Facilitate objective solutions in business decision making under subjective conditions.	1a, 3a				
CO2:	Demonstrate different statistical techniques in business/real-life situations.				1b, 1c	
CO3:	Understand the importance of probability in decision making.	2a			2b	
CO4:	Understand the need and application of analytics.				3b	
CO5:	Understand and apply various data analysis functions for business problems.				2c, 4	

L3

CO5

Cognitive level	KEYWORDS
L1 -	list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where, etc.
Remember	inst, define, ten, describe, recan, identity, show, label, tabulate, quote, name, who, when, where, etc.
L2 -	describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss
Understand	describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss
L3 - Apply	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify
L4 - Analyze	classify, outline, break down, categorize, analyze, diagram, illustrate, infer, select
L5 - Evaluate	asses, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate
L6 - Create	design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate

PO1–Theoretical Knowledge; PO2–Effective Communication Skills; PO3–Leadership Qualities; PO4 –Sustained Research Orientation; PO5 –Self-Sustaining Entrepreneurship

CI CCI HOD

Scheme of Evaluation Internal Assessment Test 2- April 2022



Sub: Business Statistics

Max
Date: 22/04/22 Duration: 90mins Marks: 50

Code: 20MBA14

Branch: MBA

Note: Part A - Answer Any Two Full Questions (20*02=40 Marks)

Part B - Compulsory (01*10= 10marks)

Part	Que	estion #	Description	Marks Distrib	oution	Max Marks
		a)	One of the most widely used statistics is the coefficient of correlation 'r' which measures the degree of association between the two values of related variables given in the data set. Properties of correlation co-efficient (r) Correlation co-efficient is independent of the units of measurement of the variables. Correlation co-efficient is independent of change of scale and origin. The value of 'r' lies between -1 and +1	1 mark 2 marks	3	
A	1	b)	Mean of X = 48, Mean of Y = 55 Bxy = 0.64 Byx = 1 RE of X on Y is $x = 0.64y + 12.8$ RE of Y on X is $y = x + 7$ The marks in Statistics (Y) given marks in Accountancy (X) = 50 is Y = 57 The marks in Accountancy (X) given marks in Statistics (Y) = 65 is $X = 54.4$	2 marks 3 marks 2 marks	7	20 M
		r = + 0.975 Probable E 6PE = 0.08	Karl Pearson's Coefficient of Correlation $r = +0.9753$ Probable Error (PE) = 0.0147 $6PE = 0.0882$ R > 6PE, hence r is significant	3 marks 4 marks 2 marks 1 mark	10	-
	2	a)	Mutually Exclusive Events – Two or more events are said to be mutually exclusive if the happening of any one of them excludes the happening of all others in the same experiment. Addition theorem of probability (Theorem of total probability): If A and B are any two events of a random experiment, then the probability of	1 mark 1 mark	3	20 M

			occurrence of e		_	•	Λ ο D\				
			Union of two	3) = P (A) • events -	•	•	•				
			events of a ra these events is or B. It is deno	ndom exp s the even	1 mark						
		b)	To fit a Poisso	on Distrib	oution						
			No. of errors Frequency	0 123	1 59	2	3	1	3 marks		
			The theoretica $T0 = 121.3 \sim 100$		7						
			$T1 = 60.65 \sim 6$								
			$T2 = 15.16 \sim 3$ $T3 = 2.53 \sim 3$ $T4 = 0.32 \sim 0$	15	4 marks						
		c)	Mean of X = 63 Bxy = 2.1983 Byx = 0.3911	·	1 mark 2 marks 2 marks						
			RE of X on Y is $x = 2.1983y - 67.2409$ RE of Y on X is $y = 0.3911x + 34.6525$ The value of imports when exports is 70 crore rupees						2 marks 2 marks 1 mark	10	
_			= 62.0295 crore	es				•	2 man.x		
		a)	(i) Standard de the mean of the (ii) Binomial dis	e squares c			•		1 mark		
			A probability probability ma					_			
			distribution. $p(x) = {}^{n}C_{x} p^{n}$	x q ^{n-x}	>	x = 0,1	,2	n 0<	2 marks		
			p < 1; q = 1 - p Here, the variable X is discrete and it is called Binomial variate (iii) Spurious Correlation is a mathematical relationship in which two or more events or variables are associated but <i>not</i> causally related, due to either coincidence or the presence of a certain third, unseen factor.							4	
	3								1 mark		20 M
		b)	Company	Mean	S.D).	C.V				
			TATA	11.3	5.6	178	49.7	15%	2 marks		
			HYUNDAI	11.9	5.1	614	43.3	73%	4 marks 4 marks	16	
			(i) Mean of H	•			A, hen	ce	, mains		
			Hyundai has h (ii) C.V. of Hy	2 marks							

			Hyundai shows greater consistency in performance.	4 marks		
		a)	Spearman's Rank correlation co-efficient between: Judge X & Y = - 0.2121	3 marks 2 marks		
В	4		Judge Y & $Z = -0.2969$ Judge X & $Z = 0.6363$ Judge X and Judge Z have got nearest approach to beauty.	2 marks 2 marks 1 mark	10	10 M