CMR INSTITUTE OF TECHNOLOGY

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CMR INSTITUTE OF TECHNOLOGY, BENGALURU.
ACCREDITED WITH A+ GRADE BY NAAC

Internal Assesment Test - I

Sub:	**Business Statistics**						Code:	**20MBA14**
Date:	18/03/2022	Duration:	90 mins	Max Marks:	50	Sem: I	Branch:	**MBA**

		Marks	OBE	
			CO	RBT
	Part A - Answer Any Two Full Questions (2* 20 = 40 marks)			
1 (a)	Define statistical inquiry. Distinguish between census method and sample method giving examples.	[03]	CO1	L1 & L2
(b)	For the data given below, find the missing frequency if the arithmetic mean is Rs.33 Lakhs.	[07]	CO4	L2
(c)	Calculate appropriate measure of dispersion for the following data.	[10]	CO2	L3
2 (a)	What is a measure of dispersion? Differentiate between absolute and relative measures of dispersion.	[03]	CO1	L1 & L2
(b)	List any 3 properties of arithmetic mean. Based on the property answer the following question: In a certain examination, average grade of all the students in a class A was 68.4 and students in class B is 71.2. If the average of both class combined is 70 find the percentage of students in class A and class B.	[07]	CO1	L1
(c)	Calculate mean deviation and its co-efficient using median.	[10]	CO2	L3
3 (a)	Define Statistics. Explain the role of statistics in business and management.	[03]	CO1	L1 & L2
(b)	Calculate appropriate average for the following data:	[07]	CO2	L3
(c)	Calculate mean and mode from the following data:	[10]	CO2	L3

1 (b)

Loss (Lakh Rs.)	0-10	10-20	20-30	30-40	40-50	50-60
No. of shops	10	15	30	-	25	20

1 (c)

C.I	Less than 30	30 – 50	50 – 70	70 – 90	Above 90
f	5	7	15	20	8

2 (c)

Marks	10-14	15-19	20-24	25-29	30-34	35-39
No. of Students	5	12	22	25	14	10

3 (b)

Days Absent	No. of workers
Less than 20	11
20-40	24
40-60	32
60-80	45
80-100	18
100-120	10
Above 120	9

3 (c)

X	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
f	5	12	22	25	14	10	8	4

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

					CO4	L3

4 The expenditure of 1000 families is given as under. The median for the distribution is Rs.87. calculate the missing frequencies.

Expenditure	40 – 59	60 – 79	80 – 99	100 – 119	120 – 139
No. of families	50	?	500	?	50

Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5
CO1:	Facilitate objective solutions in business decision making under subjective conditions.	1a, 2a, 2b, 3a				
CO2:	Demonstrate different statistical techniques in business/real-life situations.				1c, 2c, 3b, 3c	
CO3:	Understand the importance of probability in decision making.					
CO4:	Understand the need and application of analytics.				1b, 4	
CO5:	Understand and apply various data analysis functions for business problems.					

Cognitive level	KEYWORDS
L1 - Remember	list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where, etc.
L2 - 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**

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Scheme of Evaluation
Internal Assessment Test 1– Mar 2022

Sub:	**Business Statistics**	Code:	20MBA14

Date**:** 18/03/22   Duration: 90mins   Max Marks: 50   **Sem:** I   **Branch:** MBA

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

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

Part	Question #		Description	Marks Distribution		Max Marks
A	1	a)	Meaning of statistical inquiry - A study of characteristics of units of a population by using statistical devices and techniques is called statistical inquiry/investigation.	1 mark	3	20 M
			Any 2 differences between census method and sampling method with examples	2 marks		
		b)	Given arithmetic mean = Rs. 33 Lakhs			
			Calculation table	3 marks	7	
			Mean formula and solving for missing frequency	4 marks		
			Missing frequency (p) = 25			
		c)	Appropriate Measure of dispersion for open-ended classes is quartile deviation	1 mark	10	
			Calculation table	2 marks		
			First and third Quartile calculation			
			Q1 = 52.33	2 marks		
			Q3 = 84.25	2 marks		
			Q.D. = 31.92	2 marks		
			Co-efficient of Q.D. = 0.2333	1 mark		
	2	a)	Measure of dispersion is a measure that describes how spread out or scattered a set of data. It is also known as measure of dispersion or measures of spread. **Differentiation between Absolute and Relative Measures of Dispersion** The measures of dispersion which are expressed in terms of the original units of a series are termed as absolute measures. Such measures are not suitable for comparing the variability of the two distributions which are expressed in different units of measurement.	1 mark	3	20 M
			Relative measures of dispersion are obtained as ratios or percentages and are thus pure numbers independent of the units of measurement. They are	2 marks		

			used for comparing the variability of two distributions.			
		b)	**Properties of Arithmetic Mean** * Algebraic sum of the deviations of a set of values from their arithmetic mean is zero. * Sum of the squared deviations of a set of values is a minimum when deviations are from the arithmetic mean	3 marks	7	
			* Let $\bar{x}_1$ be the arithmetic mean of a set of n_1 values and let x_2 be the arithmetic mean of another set of n_2 values. Then the arithmetic mean of the two set of values put together is called as combined mean. Combined mean formula and solving for the percentage of students in Ratio of Class A:Class B = 3:4 Class A = 42.85 ~ 43 % Class B = 57.14 ~ 57 %	4 marks		
		c)	The given distribution belongs to inclusive series. First we convert it into Exclusive series by applying correction factor and then calculate mean deviation. Mean deviation calculation table Median (Md) = 25.5 Calculation of mean deviation (M.D.) = 5.561 Co-efficient of M.D. = 0.2180	1 mark 3 marks 2 marks 3 marks 1 mark	10	

3		a)	Meaning of Statistics - Statistics may be defined as the science of collection, presentation, analysis and interpretation of numerical data. – *Croxton and Cowden*
			
			Role of statistics in Business and Management (Any 2 points)
			  + Statistical analysis of variations of price, demand and production are helpful to businessmen and economists.
			  + Cost of living index numbers help in economic planning and fixation of wages. They are used to estimate the value of money.
			  + Helps in decision making using probabilities and estimates
				1 mark
				
				2 marks
					3	20 M

		b)	Appropriate average for open-ended classes is Median or Mode Median calculation table Median formula and calculation Median = 63.33 Days absent **OR** Mode calculation table	1 mark 2 marks 4 marks	7	

			Mode formula and calculation	2 marks		
			Mode = 66.5 Days absent	4 marks		
		c)	The given distribution belongs to inclusive series. First we convert it into Exclusive series by applying correction factor and then calculate mean and mode. Calculation table for mean and mode Mean value = 45.8 Mode value = 41.6428		10	
B	4	a)	Given Median (Md) = Rs. 87 No. of families (N) = 1000 Calculation table Median formula and solving for missing frequencies P = 263 Q = 137	1 mark 3 marks 6 marks	10	10 M