CBCS SCHEME

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20MBA14

First Semester MBA Degree Examination, July/August 2021
Business Statistics

Time: 3 hrs. Max. Marks:100

Note: ***1. Answer any FIVE full questions.***
2. Table values given in the questions.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

1 a. Explain the functions of statistics. **(03 Marks)**

b. Find mean and standard deviation from the following data :

X	10	20	30	40	50	60	70	80
Y	15	30	53	75	100	110	115	125

(07 Marks)

c. From the prices of X and Y shares, A and B respectively given below state which share is more stable in value?

Price of Share A	55	54	52	53	56	58	52	50	51	49
Price of Share B	108	107	105	105	106	107	104	103	104	101

(10 Marks)

2 a. Discuss the advantages and limitations of diagrams and graphs. **(03 Marks)**

b. For a certain frequency table, which hrs only been partly reproduced, here the mean was found to be 1.46. Calculate the missing frequency. N = 200.

No of accidents	0	1	2	3	4	5
No of days	46	?	?	25	10	5

(07 Marks)

c. Calculate Spearman's rank correlation coefficient between advertisement cost and sales from the following data.

Advertisement cost (1000Rs.)	39	65	62	90	82	75	25	98	36	78
Sales (lakhs Rs.)	47	53	58	86	62	68	60	91	51	84

(10 Marks)

3 a. Explain the significance in measuring dispersion. **(03 Marks)**

b. Discuss the difference between parametric and non-parametric test. **(07 Marks)**

c. Mysuru Mahanagar Palike surveyed the travel preferences of people who travelled to work by train or bus. The initial analysis suggested that in 5 people travelled by train to work. If 5 people are interviewed, what is the probability that,

i) Exactly 3 prefer travelling by train
ii) Less than 3 prefer travelling by train. **(10 Marks)**

4 a. What is Type I and Type II errors. **(03 Marks)**

b. Define the following terms :

i) Independent event
ii) Mutually exclusive event
iii) Equally likely event. **(07 Marks)**

c. Below are given the figures of production (in thousand tons) of a sugar factory :

Year	1999	2000	2001	2002	2003	2004	2005
Production	77	88	94	85	91	98	90

i) Fit a straight line by the method of 'Least Squares' and show the trend values
ii) What is the monthly increase in production? **(10 Marks)**

5 a. What do you mean by correction? Give any two examples of negative correction. **(03 Marks)**

b. The hourly wages of 1000 workmen are normally distributed around a mean of Rs.70 and with a standard deviation of Rs.5. Estimate the number of workers whose hourly wages will be : i) Between Rs.69 and Rs.72 ii) More than Rs.75 iii) Less than Rs.63.

Area under standard normal probability curve :

Z	0.1	0.2	0.3	0.4	1.0	1.4	1.5	2.0
AREA	0.0398	0.0793	0.1179	0.1554	0.3413	0.4192	0.4332	0.4772

(07 Marks)

c. The sales data of an item in six shops before and after a special promotional campaign are as under : $t_5(0.05) = 2.02$.

Shops	A	B	C	D	E	F
Before campaign	53	28	31	48	50	42
After campaign	58	29	30	55	56	45

(10 Marks)

6 a. Under what conditions binomial distribution tends to Poisson distribution. **(03 Marks)**

b. If 5% of the electric bulbs manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs.
i) None is defective ii) 5 bulbs will be defective. (Given : $e^{-5} = 0.007$). **(07 Marks)**

c. From the data given below find :
i) The two regression coefficients
ii) The two regression equations
iii) The coefficient of correlation between.
Marks in economics and statistics :

Marks in economics	25	28	35	32	31	36	29	38	34	32
Marks in statistics	43	46	49	41	36	32	31	30	33	39

(10 Marks)

7 a. What is mode? Give two examples of mode. **(03 Marks)**

b. Intelligent test of two groups of boys and girls gave the following results :

	Mean	S.D.	N
Girls	75	15	150
Boys	70	20	250

Is there a significant difference in the mean scores obtained by boys and girls, (Test $\alpha = 1\%$). **(07 Marks)**

c. The following data present the yield in quintals of IONS on ten sub-divisions of equal area of two agricultural plots :

PLOT – 1	6.2	5.7	6.5	6.0	6.3	5.8	5.7	6.0	6.0	5.8
PLOT – 2	5.6	5.9	5.6	5.7	5.8	5.7	6.0	5.5	5.7	5.5

Test whether two samples taken from two random population having the same variance. (At 5% level for $V_1 = 9$ and $V_2 = 9$ is 3.18). **(10 Marks)**

8 a. Find : i) Interquartile range ii) Quartile deviation
iii) Coefficient of quartile deviation for the following :

Class interval	0 – 15	15 – 30	30 – 45	45 – 60	60 – 75	75 – 90	90 –105
Frequency	8	26	30	45	20	17	4

(10 Marks)

b. Three products received the following performance.

Product A	50	62	75	48	65	$\chi^2_2(0.05) = 5.991$
Product B	80	95	98	87	90	
Product C	60	45	30	58	57	

Use the Kruskal – Wallies test at $\alpha = 0.05$ to determine whether there is a significant difference in the performance rating of products. **(10 Marks)**

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