D 115591 **(Pages : 3)** **Name.....**

Reg. No.....

FIRST SEMESTER M.B.A. DEGREE [2016 SCHEME] EXAMINATION JANUARY 2025

M.B.A. (CUCSS)

BUS IC 07—QUANTITATIVE TECHNIQUES

Time : Three Hours Maximum : 36 Weightage

Part A

Answer **all** *questions.*
Each question carries 1 *weightage.*

1. What is addition theorem ?
2. Explain exponential distribution.
3. What is the purpose of Correlation test ?
4. Explain central limit theorem.
5. What are the tools used in SPSS ?
6. What is non parametric test ?

(6 × 1 = 6 weightage)

Part B

Answer any **four** *questions.*
Each question carries 3 *weightage.*

7. A systematic sample of 200 pages was taken from a dictionary and the observed frequency distribution of foreign words per page was found to be as follows . calculate the expected frequencies using Poisson distribution :

No. of foreign words per page (x)	:	0	1	2	3	4
Frequencies (y)	:	109	65	22	3	1

8. What are the properties and importance of correlation analysis ?

Turn over

9. A researcher want to find one if there is a relationship between the heights of the sons and the heights of the father :

Father (X)	:	63	65	66	67	67	67	68
Son (Y)	:	66	68	66	67	69	69	70

Estimate the height of the son, if the father height is 70".

10. Distinguish between favorable events and complementary events.

11. In a manufacturing unit, four teams of operators were randomly selected and sent to four different facilities for machining techniques training. After the training, the supervisor conducted the exam and recorded the test scores. At 95 % confidence level does the scores are same in all four facilities ?

Facility 1	Facility 2	Facility 3	Facility 4
88	77	71	52
82	76	56	65
86	84	64	68
87	59	51	81

12. Explain regression model for forecasting with SPSS.

(4 × 3 = 12 weightage)

Part C

Answer any **three** *questions.*
Each question carries 4 *weightage.*

13. In an experiment on the effect of a growth regulator on fruit setting in muskmelon the following results were obtained. Test whether the fruit setting in muskmelon and the application of growth regulator are independent at 1 % level.

	Fruit set	Fruit not set	Total
Treated	16	9	25
Control	4	21	25
Total	20	30	50

14. From following information find the correlation co-efficient between advertisement expenses and sales volume using Karl Pearson's co-efficient of correlation method :

Firm	:	1	2	3	4	5	6	7	8	9	10
Advertisement exp (Rs. In lakhs)	:	11	13	14	16	16	15	15	14	13	13
Sales volume (Rs. in lakhs)	:	50	50	55	60	65	65	65	60	60	50

15. a) 80 % of all business startups in the IT industry report that they generate a profit in their first year. If a sample of 10 new IT business startups is selected, find the probability that exactly seven will generate a profit in their first year.

b) The average number of acres burned by forest and range fires in a large New Mexico county is 4,300 acres per year, with a standard deviation of 750 acres. The distribution of the number of acres burned is normal. What is the probability that between 2,500 and 4,200 acres will be burned in any given year ?

16. What are the differences between parametric and non-parametric tests ?

17. Describe the important properties of a good estimator.

(3 × 4 = 12 weightage)

Part D

Compulsory.

Question carries 6 *weightage.*

18. The illness caused by a virus in a city concerning some restaurant inspectors is not consistent with their evaluations of cleanliness of restaurants. In order to investigate this possibility, the director has five restaurant inspectors to grade the cleanliness of three restaurants. The results are shown below.

Inspectors	Restaurants		
	I	II	III
1	71	55	84
2	65	57	86
3	70	65	77
4	72	69	70
5	76	64	85

Carry out two-way ANOVA at 5 % level of significance.

(1 × 6 = 6 weightage)