

QP Code

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Register Number

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VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY

(An Autonomous Institution, Affiliated to Anna University, Chennai)

Semester Examinations – April / May 2017

Regulations-2016

Programme: MBA

Semester: 1

Max. Marks: 100

Duration 3 Hrs

Course Code & Title: **16MST12 STATISTICS FOR MANAGEMENT**
(Statistical Table needed)

Knowledge Levels (KL) K1 - Remembering
K2 - Understanding

K3 - Applying
K4 – Analyzing

K5 – Evaluating
K6 – Creating

Part A - Answer ALL Questions.

10 x 2 = 20 Marks

No.	Question	KL
1.	Find the median and mode for the weights (kgs) of 15 persons given as 68, 85, 70, 65, 71, 67, 65, 55, 80, 62, 65, 64, 70, 60, 56.	K3
2.	Define mutually exclusive events.	K1
3.	State the level of significance in testing of hypothesis.	K1
4.	Define stratified sampling technique.	K1
5.	Distinguish between one-way and two-way analysis of variance.	K2
6.	Define Null Hypothesis and Alternative Hypothesis with examples.	K1
7.	Mention the advantages of Nonparametric Tests.	K2
8.	List out the uses of Chi-Square distribution.	K1
9.	Distinguish between correlation and regression.	K2
10.	Name any three forecasting methods used in time series analysis.	K1

Part B - Answer ALL Questions.

5 x 13 = 65 Marks

No	Question	Marks	KL
11.	a i. Compute median for	7	K3

Class	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79
F	5	8	14	16	35	28	16	8

6 K3

A sample of charge accounts at a local drug store revealed the following frequency distribution of unpaid balances.

ii.	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"><tr><td>Unpaid balance</td><td>10-29</td><td>30-49</td><td>50-69</td><td>70-89</td><td>90-109</td></tr><tr><td>Frequency</td><td>1</td><td>6</td><td>9</td><td>11</td><td>13</td></tr></table>	Unpaid balance	10-29	30-49	50-69	70-89	90-109	Frequency	1	6	9	11	13
Unpaid balance	10-29	30-49	50-69	70-89	90-109								
Frequency	1	6	9	11	13								

Determine the mean unpaid balance.

OR

- b i. Box A contains 4 White and 6 Red and 2 Black balls. Another box contains 5 White and 3 Red and 2 Black balls. A box is selected at random and Two balls are drawn from that box and found to be 1 Red and 1 Black ball. What is the probability that the Two balls come from box A. 7 K4
- ii. In the production of electric bulbs, the quality specification of their life was found to normally distribute with average life of 2100 hours and standard deviation of 80 hours. In a sample of 1500 bulbs, find out the expected number of bulbs likely to burn for (i) more than 2200 hours and (ii) less than 1950 hours. 6 K4
12. a There are 5000 students in a University. The average age of all the students is 24 years with standard deviation of 8 years. A random sample of 50 students is selected. (i) Determine the standard error of the mean. (ii) What is the probability that the sample mean will be larger than 22.5 years (iii) What is the probability that the sample mean will be between 25 and 28.5 years. 13 K5

OR

- b The consumption of Tea in a State follows normal distribution with unknown mean μ and standard deviation 1.55 kgs. In a sample of 35 households the average consumption of tea for one year was found to be 6.5kgs. (i) Test if the average consumption of tea per year in the whole state could be 6.8kgs. (ii) How large a sample must be taken in order to be 98% certain that the sample mean is within 1.2 kgs of the population mean. 13 K5
13. a i. The following sample was drawn from a normal population. 7 K5
45 60 55 58 42 35 60 65 55 40
Test at 1% level of significance if the population mean could be 50.
- ii. The weights of 8 persons are found to be 60, 65, 70, 68, 62, 63, 60, and 66 kgs. 6 K5
The weights of another group of 12 persons are found to be 70, 60, 58, 56, 50, 48, 52, 56, 52, 50, 54, and 50. Can we conclude that both samples have come from populations with same variances?

OR

- b Apply one way ANOVA technique with respect to representative and write your comment regarding the sales(in Rs. Lacs) 13 K3

Area				
Representatives	1	2	3	4
A	12	16	20	18
B	15	10	12	16
C	10	08	16	15

14. a The scores of a written examination of 24 students, who were trained by using three different methods, are given below. 13 K5

Video cassetteA	74	88	82	93	55	70	65		
Audio cassetteB	78	80	65	57	89	85	78	70	
Class Room C	68	83	50	91	84	77	94	81	92

Use Kruskal-Wallis test at $\alpha = 5\%$ level of significance, whether the three methods of training yield the same results.

OR

- b In a study of sedimentary rocks, the following data were obtained from samples of 32 grains from two kinds of sand : 13 K3

Sand I	63	17	35	49	18	43	12	20	47
“	136	51	45	84	32	40	44	25	
Sand II	113	54	96	26	39	88	92	53	101
“	48	89	107	111	58	62			

Apply Mann-Whitney U test with suitable null and alternative hypotheses.

15. a The revenue generated at a business unit and is given below. Fit the trend line using least squares method and estimate the revenue for the year 2013. 13 K6

Year	2005	2006	2007	2008	2009	2010	2011	2012
Revenue (Rs. 00)	268	209	390	290	280	450	350	455

OR

b Find the seasonal variations by ratio-to-trend method from the data given below.

13

Year	Quarter I	Quarter II	Quarter III	Quarter IV
2007	30	40	36	34
2008	34	52	50	44
2009	40	58	54	48
2010	54	76	68	62
2011	80	92	56	82

Part-C

1 x 15 = 15 Marks

16 a A clothing manufacturer purchased some newly designed. sewing machines in the hopes that production would be increased. the production records of random sample of workers are shown below.

15

Worker	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Old machine	28	36	27	25	38	36	40	29	32	28	20	32	32	32	36
New machine	36	40	25	32	30	32	40	28	35	33	26	31	23	34	36

Use the sign test to determine whether the new machine have significantly increased production. use 0.05 LOS

OR

b A tea company appoint four salesmen A, B, C and D and observes their sales in three seasons summer, winter and monsoon. The figures (in lakhs) are given in the following table:

15

Seasons	Salesmen			
	A	B	C	D
Summer	36	36	21	35
Winter	28	29	31	32
Monsoon	26	28	29	29

Carry out an analysis of variance and test whether there is any significant difference in the salesmen and in the seasons at 10% LOS.
