

AU-1552

M.Com. (Semester—III) Examination**STATISTICAL ANALYSIS****Paper—302**

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory.

(2) All questions carry equal marks.

(3) Students may use alternate method, if not specified.

1. The competitors in a beauty contest are ranked by three judges in the following order :

Candidates	First Judge	Second Judge	Third Judge
A	1	3	6
B	6	5	4
C	5	8	9
D	10	4	8
E	3	7	1
F	2	10	2
G	4	2	3
H	9	1	10
I	7	6	5
J	8	9	7

Determine which pair of Judges have the nearest approach to common tests in beauty.

16

OR

From the following data of the ages of Husband's (X) and the ages of Wife's (Y) at marriage, find the regression equation of Y on X and obtain an estimate of Y which would correspond to X = 32 years.

Husband's age in years (X)	Wife's age in years (Y)	
23	18	
27	20	
28	22	
28	27	
29	21	
30	29	
31	27	
33	29	
35	28	
36	29	16

2. The weekly income of a random sample of workers in Factory 'A' and 'B' is as follows :

Factory : A (Rs.) 65 67 70 71 73 74

Factory : B (Rs.) 61 62 65 66 69 69 70 71 73 74

Discuss the validity of the suggestion that factory 'A' pays its workers much better than factory 'B'.
16

OR

The average number of defective articles in a certain factory is claimed to be less than the average for all the factories. The average for all the factories is 30.5. A random sample of 100 defective articles showed the following distribution :

Class limit :	16–20	21–25	26–30	31–35	36–40
Number :	12	22	20	30	16

Calculate the mean and the standard deviation of the sample and use it to test the claim that the average is less than the figure for all the factories at 5% level of significance.
[Given $Z(-1.645) = 0.95$].
16

3. From the figures given in the following table, compare the association between literacy and unemployment in rural and urban areas :

	Urban (Lakhs)	Rural (Lakhs)	
Total adult men	25	200	
Literate men	10	40	
Unemployed men	5	12	
Literate and unemployed	3	4	16

OR

Construct the Fisher Ideal Index number for the year 2017 on the basis of year 2015 from the following data :

Article	Quantity		Unit	Price	
	2015	2017		2015	2017
Food	60 kg	65 kg	per kg	18	20
Cloth	50 meter	60 meter	per meter	60	62
Electricity	130 units	160 units	per unit	3	3
House Rent	4 rooms	4 rooms	per room	60	65
Miscellaneous	30 units	60 units	per unit	40	52

4. Find the expectation of life at the age of 24 using the following data by Newton's Method :

Age	Expectation
15	33
20	30
25	26
30	24

16

OR

A University has to select an examiner from list of 50 persons, 20 of them are women and 30 men, 10 of them know Hindi and 40 do not, 15 of them being teachers and the remaining 35 are not. What is the probability of University selecting a Hindi knowing woman teacher ? 16

5. What are the different Statistical Quality Control Methods ? State the procedure of setting up the control limits. 16

OR

Apply the method of least squares to determine the Sales for the year 2019 from the following data :

Year :	2011	2012	2013	2014	2015	2016	2017	
Sales :	100	110	130	125	170	168	191	16

