

GANPAT UNIVERSITY
 B. Tech. Semester: IV (BMI/CE/CL/EC/EE/IT/MC/ME) (Open Elective)
 CBCS Regular Examination May-June 2014
 Subject: 2OS401 Research Methods & Statistical Applications

Time: 3 Hours

Total Marks: 70

Instruction:

1. All questions are compulsory.
2. Write answer of each section in separate answer books.
3. Figures to the right indicate marks of questions.
4. Standard terms and notation are used.

SECTION I

- Q-1 (A) Two Samples are drawn from two normal population form the following data. Test whether the two samples have the same variance. (Take $F_{tab} = 3.68$) [07]

Sample A	60	65	71	74	76	82	85	87	--	--
Sample B	61	66	67	85	78	63	85	86	88	91

- (B) An auto company decided to introduce new six cylinder car whose mean petrol consumption is claimed to be lower than that of the existing auto engine. It was found that the mean petrol consumption for 50 cars was 10 Km per liter with a standard deviation of 3.5 Km per liter. Test for the company at 5% level of significance, whether the claim new car petrol consumption is 9.5 Km per liter on average is acceptable. $Z_{tab} = 1.96$ For 5% level of significance. [05]

OR

- Q-1 (A) Two independent samples of 8 and 7 items respectively had the following values of the variable. [07]

Sample 1	9	11	13	11	15	9	12	14
Sample 2	10	12	10	14	9	8	10	--

Do the two estimates of population variance differ significantly? (Take $F_{tab} = 4.21$)

- (B) Two sample of 100 electric bulbs each has mean 1500 and 1550 their standard division are 50 and 60 respectively can it the regarded to brands differ significant at 1% level of significance. Use $Z_{tab} = 2.58$ for 1% of significant level. [05]

- Q-2 (A) Draw and explain flow diagram for hypothesis testing. [05]

- (B) Based on information on 1000 randomly selected fields about the tenancy status of the cultivation of these fields and use of fertilizers collected in agro-economics survey. The following information was noted. [06]

	Owned	Rented	Total
Using fertilizers	416	184	600
Not using fertilizers	64	336	400
Total	480	520	1000

Would you conclude that owner cultivators are more incline toward the use of fertilizer at 5% significance (use $\chi_{tab}^2 = 3.84$)

OR

- Q-2 (A) What is "hypothesis"? Explain: type I error & type II error. [05]

- (B) The following data is collected on two characters. /Based on this can you say that there is no relation between smoking and literacy. (Take $F_{tab} = 3.68$) [06]

	Smokers	Non-smokers
Literates	83	57
Illiterates	45	68

- Q-3 (A) Compare Population study and Sample study. [06]
(B) Explain following terms: (1) Editing (2) Classification [06]

SECTION II

- Q-4 (A) Explain the research that is in context to generalization and with the formulation of a theory. [06]
(B) Draw the flow chart of research process and write the steps of research process. [06]

OR

- Q-4 (A) Which problems are occurred or encountered by researcher in India. [06]
(B) What are the necessities of defining the problems? [06]

- Q-5 (A) Write all the concept related to research design and explain only research hypothesis. [05]
(B) Explain the sample analysis based on cost of collecting data and cost of incorrect inference from data. [06]

OR

- Q-5 (A) What is the probability sampling and explain the systematic sampling. [05]
(B) Explain the non probability sampling in detail. [06]

- Q-6 (A) Classified and evaluating the measurement scales. [06]
(B) Explain observation methods for data collections. [06]

END OF PAPER