



# UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program : Fifth Semester – Fall 2021

Paper: Parametric and Nonparametric Tests (Theory)  
Course Code: STAT-301

Roll No. ....  
Time: 3 Hrs.      Marks: 60

**Q.1. Give short answers of the following: (6x5=30)**

- i) Define Distribution free test also enlist its advantages.
- ii) Describe Fisher’s exact test for a 2x2 contingency table.
- iii) Explain Mann-Whitney U test also outline its steps to test hypothesis.
- iv) Write a short note on Sequential Testing that includes its definition and advantage?
- v) Differentiate Type I and Type II error giving examples.
- vi) Explain: One tailed test, Two tailed test

**Answers the following questions. (3x10=30)**

**Q.2.**

The following data are from a research study using three separate sample to evaluate the differences among three treatment conditions.

TREATMENTS	I	22	17	31	18	34	12	278
	II	44	39	50	14	57	24	40
	III	20	60	48	36	53	72	42

Use the Kruskal-Wallis test to determine whether there are any significant differences among the three treatments. Test at the 0.05 level of significance. (10)

**Q.3.**

Three independent samples gave the following results:

I	34	40	47	60	84				
II	40	59	60	67	86	92	95	98	108
III	46	93	100						

Use the Bartlett’s test to test the hypothesis of equal variances. Let  $\alpha = 0.05$  (10)

**Q.4.**

In a certain community, a random sample of 50 men and another sample of 50 women over 21 years of age were asked about their educational background, classified as junior high, senior high or college. The results are:

	Junior High	Senior High	College
Male	13	25	12
Female	23	20	7

Test whether the two samples are homogeneous in respect of educational levels. Let  $\alpha = 0.05$  (10)