

(2)

(b) Compare the following two kinds of emergency flores on the basis of the following burning times (rounded to the nearest tenth of a minute). Use Mann-Whitney's U-test at  $\alpha = 5\%$ . 8+8

4. Stating necessary details, define a one way ANOVA alongwith its model and the working table. 4+7+5

5. (a) Three groups of guinea pigs were injected respectively with 0.5, 1.0 and 1.5 milligrams of a tranquilizer, and the following are the numbers of seconds it took them to fall asleep :

0.5 mg dose : 8.2, 10.0, 10.2, 13.7, 14.0, 7.8, 12.7, 10.9

1.0 mg dose : 9.7, 13.1, 11.0, 7.5, 13.3, 12.5, 8.8, 12.9, 7.9, 10.5

1.5 mg dose : 12.0, 7.2, 8.0, 9.4, 11.3, 9.0, 11.5, 8.5

Use the H-test at  $\alpha = 1\%$  to test the null hypothesis that the difference in doses have no effect on the length of time it takes guinea pigs to fall asleep.

(b) Consider the following sequence of H and D<sub>s</sub>  
HHHHDDDDHHHHHHHDDHHDDDD

Test the above sequence for Randomness at  $\alpha = 5\%$

8+8

—— X ——

Ex/MATH/STAT/22/10STAT/2019(OLD)

**BACHELOR OF SCIENCE EXAMINATION, 2019**

(2nd Year, 2nd Semester, Old Syllabus)

**STATISTICS (SUBSIDIARY)**

**Inference - II**

**Paper : 10 Stat**

Time : Two hours

Full Marks : 50

Attempt *q.no. 1* and any *three* from the rest.

1. Write down the mean and variance of a Poisson random variable with parameter 10. 2

2. Write short notes on : 4x4=16  
(i) sign tests  
(ii) Test for Randomness  
(iii) Test for Homogeneity  
(iv) Rank sum test.

3. (a) The following are 15 measurements of the octane rating of a certain kind of petrol :  
97.5, 95.2, 97.3, 96.0, 96.8, 100.3, 97.4, 95.3, 93.2, 99.1, 96.1, 97.6, 98.2, 98.5, 94.9  
Use signed-rank test at 5% level of significance to test whether or not the mean octane rating of this given kind of petrol is 98.5.

(Turn Over)