LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **STATISTICS**

FIFTH SEMESTER – NOVEMBER 2017

ST 5510 /ST 5505/ ST5501- TESTING OF HYPOTHESIS

Date: 06-11-2017 Dept. No. Max. : 100 Marks
Time: 09:00-12:00

Part-A

Answer all the questions **(10 x 2 = 20 marks)**

1. Define type II error.
2. What is composite hypothesis?
3. Define most powerful test?
4. Define null hypothesis?
5. What is critical region and acceptance region?
6. What are the basic assumption of non parametric test?
7. Mention any two advantage of non parametric test?
8. Define median test?
9. What is test for randomness?
10. What is ASN in SPRT?

Part-B

Answer any five questions **(5 x 8 =40)**

11. Test the hypothesis $H_0:\theta=1.5$ against $H_1:\theta=2.5$ by using single observation X,given that the density function of X is given by $f(x,\theta)=1/\theta$, if $x\geq 0.75$ is taken as the critical region. Obtain the size of the type I and type II errors.
12. Describe likelihood ratio test.
13. Explain errors in hypothesis testing and power of a test.
14. Find α-level likelihood ratio test of $H_0:P\leq P_0$ vs $H_1:P>P_0$ based on a sample of size one drawn from the binomial population B(n,p).
15. Explain the procedure of operating characteristic function in SPRT.
16. For the data given below test whether median = 50

    24, 35, 12, 50, 60, 70, 68, 49, 80, 25, 69, 28, 31, 37, 34, 54, 45, 95, 75, 26, 43, 57, 94, 48.
17. Explain wald's run test
18. Use the following data and means test to find if the two samples differ in their central tendencies

sample1	86	69	72	65	113	65	118	45	141	104	41	50
sample2	55	40	22	58	16	7	9	16	26	36	20	15

PART – C

Answer any Two questions (2 x 20 =40)

19. state and prove Neyman Pearson lemma

20. (a)Briefly explain the test involved for the mean of normal distribution.

    (b)Explain the test involved for the variance of Normal distribution

21. Construct the SPRT for the testing $H_0:\theta=\theta_0$ against $H_1:\theta=\theta_1$ $(\theta_1>\theta_0)$ in sampling from normal population with mean θ and variance ^{2}(known)also obtain its OC function and ASN

22. (a)A certain injection administered to each of 9 patients results in the following increases of blood pressure: -1,1,2,3,4,4,6,7,10. Can it be concluded that the injection will be accompanied by increase in BP? (10 marks)

    (b)Perform Kruskal-wallis test for the following data of three groups of workers having different salaries:

women (in 1000)	23	41	54	66	78
men (in 1000)	45	55	60	70	72
minorities (in 1000)	18	30	34	40	44

(10 marks)

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