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SVS - 337 B - 16

B.Sc Vth Semester Degree Examination

Mathematical Statistics

(Testing of Hypothesis)

Paper - VI (5.2)

Time : 3 Hours Maximum Marks : 80

Instructions to Candidates :

Statistical table and graphsheet will be supplied on request

SECTION - A

I Answer all the following questions. **(15×1=15)**

1) The hypothesis in which all the parameters are specified is known as

   a) Null hypothesis

   b) Simple hypothesis

   c) Alternative hypothesis

   d) Composite hypothesis.

2) The upper tail hypothesis is

   a) $P_1 \neq P_2$

   b) $P_1 > P_2$

   c) $P_1 < P_2$

   d) $P_1 = P_2$

3) $1-\beta$ is known as

   a) Size of critical region.

   b) Level of significance.

c) Power of test

d) None

4) Accepting hypothesis when it is false is known as

a) Type I error

b) Type II error

c) Power of test

d) Critical region.

5) For 2×2 table to test independence of attributes, the degrees of freedom is

a) 2 b) 1 c) 4 d) 8

6) For testing goodness of fit, the formula is

a) $x^2 = \sum (O_i - E_i)^2 / E_i$

b) $x^2 = \sum \left(\frac{O_i - E_i}{E_i} \right)^2$

c) $x^2 = \sum (O_i - E_i) / E_i^2$

d) $x^2 = \sum (O_i^2 - E_i^2) / E_i$

7) To test $H_o : \sigma_1^2 = \sigma_2^2$, the test used is

a) t test b) z test c) F test d) U test

8) In Small Sample , the sample size is lessthan

a) 20 b) 10 c) 40 d) 30

9) For testing randomness, the test used is

a) Sign test

b) Z - test

c) Run test

d) F - test

10) Sample Size is variable in

a) Chi Square test

b) SPRT

c) Normal test

d) t test

11) A hypothesis contrary to null hypothesis is known as _____

12) In Small sample to test $H_o : \mu = \mu_o$, test applied is _____

13) Degrees of freedom for $t = \frac{\bar{d}}{S/\sqrt{n}}$ is _____

14) If n_1 and n_2 are the sample sizes, then the degrees of freedom for F - test _____

15) The test which does not involve the parameter of probability function is known as _____ test.

SECTION - B

II Answer any **five** questions. **(5×5=25)**

16) Explain

a) Simple and composite hypothesis.

b) Critical region and level of significance.

17) Explain the procedure of testing $H_0 = P = P_o$ for large sample.

18) State Neyman pearsons lemma with an example.

19) Explain SPRT Procedure.

20) Discuss errors in testing of hypothesis and give decision table.

21) What are parametric and non parametric tests? Give merits and demerits of Non parametric test over parametric test.

22) Explain sign test.

SECTION - C

III Answer any Four of the following questions : **(4×10=40)**

23) The p.d.f for random variable X is given as below. $f(x,\theta)=\frac{1}{\theta}\ 0\le x\le\theta$ $=0$ *Otherwise* for testing $H_o:\theta=2$ against $H_1:\theta=4.3y$ single value of x. Determine size of type I and type II error for critical region $2\le x\le 2.5$.

24) Explain likelihood ratio test and its properties.

25) Explain procedure of student's t test for test means of

a) Unpaired values

b) Paired values

26) Explain the test procedure for testing independence of attributes with m×n contingency table.

27) Obtain the SPRT for testing $H_0:\mu=\mu_0$ against $H_1:\mu=\mu_1\ (>\mu_o)$ for $N(\mu,\sigma^2)$ where σ^2 is known

28) Explain Run test and median test.