[Apr-24]

GITAM (Deemed to be University)
[MATH2361]

GST/GSS/GSB/GSHS Degree Examination
IV Semester

PROBABILITY & STATISTICS
(Effective from the admitted batch 2021–22)

Time: 2 Hours **Max.Marks: 30**

Instructions: All parts of the unit must be answered in one place only.

SECTION-A

1. **Answer all the questions.** **(5x1=5M)**

   a) Define primary and secondary data.

   b) What values of k, the function $f(x)=kx, 0<x<1$, is a valid probability density function.

   c) Define Correlation and write any two applications.

   d) A manufacturer claims that percentage of defective in his product does not exceed 10. A sample of 40 contain 5 defective. Calculate the test statistic.

   e) Write any two applications of χ^2- distribution.

SECTION-B

Answer the following: **(5x5=25M)**

UNIT-I

2. Calculate the Median of the following data:

Marks	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of students	6	5	8	15	7	6	3

OR

3. The contents of urns I, II and III are as follows:
urn I: 1 white,2 black and 3 red balls,
urn II: 2 white, 1 black and 1 red balls, and
urn III: 4 white, 5 black and 3 red balls.
One urn is chosen at random and two balls drawn from it. They happen to be white and red. What is the probability that they come from urns I, II or III?

UNIT-II

4. Fit a binomial distribution to the following data:

x	0	1	2	3	4	5
f	2	14	20	34	22	8

OR

5. If X is normally distributed with mean 12 and S.D. 4 then find the probability of the following:
i) $X \geq 20$ (ii) $X \leq 20$ (iii) $0 \leq X \leq 12$

UNIT-III

6. Calculate the correlation coefficient for the following heights (in inches):

X:	65	66	67	67	68	69	70	72
Y:	67	68	65	68	72	72	69	71

OR

7. Find the means of X and Y from the regression equations
X = 2Y+3, 4Y = X+6 and also find the correlation coefficient

UNIT-IV

8. Write down the general procedure for testing of hypothesis

OR

9. The means of two large samples of sizes 1000 and 2000 members are 67.5 and 68.0 inches respectively. Can the samples have regarded as drawn from the same population of standard deviation 2.5 inches

UNIT-V

10. A random sample of size 25 from a normal population has the mean $\bar{x}$ = 47.5 and the standard deviation s = 8.4. Does this information tend to support or refuse the obtain that the mean of the population is μ = 42.5? (t table value is 2.797)

OR

11. A group of boys and girls were given an intelligence test. The mean score, S. Ps and numbers in each group are as follows:

	Boys	Girls
Mean	1234	1036
S.D	36	40
Sample size	8	7

Is the mean score of boy's significant different for m that of girls? (t table value is 2.160)

[47/IV S/124]