[Apr-24]

GITAM (Deemed to be University)
[MATH2361]
GST/GSS/GSB/GSHS Degree Examination

VI 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 questions:** **(5×1=5)**

   a) What is the probability for a leap year to have 52 Mondays and 53 Sundays?

   b) Determine the parameters of the binomial distribution for which the mean is 4 and variance is 3?

   c) Define estimation and write any two properties of point estimation.

   d) Among 900 peoples in a state 90 are found to be chapatti eaters. Construct 99% confidence interval for the population.

   e) Write any two applications of t – distribution.

Section-B

Answer the following: **(5×5=25)**

UNIT-I

2. Calculate the median for the following frequency distribution:

Class Interval	0-8	8-16	16-24	24-32	32-40	40-488
Frequency	8	7	16	24	15	7

OR

3. In a bolt factory machines A, B, C manufacture 20%,30% and 50% of the total of their output and 6%.3% and 2% are defective. A bolt is drawn at random and found to be defective. Find the probabilities that it is manufactured from (i) Machine A (ii) Machine B (iii) Machine C.

UNIT-II

4. A random variable X has the following probability function

x	0	1	2	3	4	5	6	7
P(x)	0	K	2K	2K	3K	K^2	$2K^2$	$7K^2+K$

Determine: (i) K (ii) Mean (iii) Variance.

OR

5. Fit a binomial distribution to the following data:

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

UNIT-III

6. Find rank correlation coefficient for the following data:

x	68	64	75	50	64	80	75	40	55	64
y	62	58	68	45	81	60	68	48	50	70

OR

7. Fit a Straight-line curve for the following data:

x	1	2	3	4	5	6	7	8
y	19	22	23	25	26	28	17	20

UNIT-IV

8. 20 people were attacked by a disease and only 18 survived. Will you reject the hypothesis that the survival rate, if attacked by this disease is 85% in favor of the hypothesis that it is more, at 5% level.

OR

9. A cigarette manufacturing firm claims that its brand A of the cigarettes outsells its brand by 8%. If is found that 42 out of a sample of 200 smokers prefer brand A and 18 out of another random sample of 100 smokers prefer brand B, test whether the 8% difference is valid claim.

UNIT-V

10. In an experiment of immunization of cattle from Tuberculosis, the following results were Obtained:

	Affected	Un Affected
Inoculated:	**12**	**28**
Not Inoculated:	**13**	**7**

Examine the effect of vaccine in controlling the incidence of the disease.

OR

11. 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 $\mu = 42.5$? (t table value is 2.797).