

Parshvanath Charitable Trust's A. P. STANTINSTITUTE OF TEDELENOLOGY (Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai) (Religious Jain Minority)

DEPARTMENT OF DATASCIENCE

UNIT TEST-I

Class: TE Semester: V Subject: Statistics for AI&DS

Date: 09-09-2023 Time: 10:00am - 11:30am Max marks: 40

Note the following instructions

1. Attempt all questions.

- 2. Draw neat diagrams wherever necessary.
- 3. Write everything in Black ink (no pencil) only.
- 4. Assume data, if missing, with justification.

Q.N	Questions	MARKS	СО	Blooms Taxonomy Level	PO2
Q.1.	Attempt any two.				
	a) Illustrate in detail the Central limit theorem.	[5]	CO2	L2	
	b) Define Confidence Interval and Calculate the range of heights (95% confidence level) for the given population. The mean = 175cm, SD = 20cm, sample size = 40 and z=1.960.	[5]	CO2	L2	
	c) Describe Normal Distribution.	[5]	CO2	L2	
	d) Discuss Bootstrapping algorithm.	[5]	CO2	L2	
Q.2.	a) Find Q1, Q2 and Q3 for the following dataset. Identify the outliers and draw a box and whisker plot. {5, 40, 42, 46, 48, 49, 50,50, 52, 53, 55,56, 58, 75,102}.	[10]	CO1	L3	PO1, PO12
	OR				

marks of 100 students in the examination by a histogram.										
marks of 100 students in the examination by a histogram.	1, PO12	\dashv	L3	CO1	[10]	ibution of	ining distri	adjoini	b) Calculate the	
histogram.	,				` '		_	_	•	
Less than 10						-			histogram.	
Less than 10						Number of	Marks Obtained			
Less than 20 6						students				
Less than 30 24						4		10	Less than	
Less than						6		20	Less than	
Less than 50 67								30		
Less than 60 86										
Less than 70 96										
Less than 80 99										
Less than 90 100 100									l	
AND c) Consider two data set A={4,6} and B={1,9}. Calculate the variance and justify the need of variance. OR d) Consider the below given data and calculate the mode. Marks Frequency 0-10 2 10-20 5 20-30 6 30-40 5 40-50 2 Q.3. a) Solve the following: [10] CO3 L3 PO1										
C) Consider two data set A={4,6} and B={1,9}. Calculate the variance and justify the need of variance. OR						100		90	Less than	
C) Consider two data set A={4,6} and B={1,9}. Calculate the variance and justify the need of variance. OR										
B={1,9}. Calculate the variance and justify the need of variance.										
d) Consider the below given data and calculate the mode. Marks Frequency	1, PO12		L3	CO1	[5]					
Calculate the mode. Marks Frequency									OR	
Q.3. a) Solve the following: 0-10	1, PO12		L3	CO1	[5]	ven data and				
Q.3. a) Solve the following: 0-10						ency	Freque		Marks	
Q.3. a) Solve the following: [10] CO3 L3 PO1									0-10	
Q.3. a) Solve the following: [10] CO3 L3 PO1							5		10-20	
Q.3. a) Solve the following: [10] CO3 L3 PO1.										
Q.3. a) Solve the following: [10] CO3 L3 PO1							5		30-40	
							2		40-50	
A drug V claimed to be effective in suring	1, PO12		L3	CO3	[10]		g:	lowing:	a) Solve the following	Q.3.
A drug X claimed to be effective in curing						ctive in curing	to be effec	med to	A drug X clair	
colds. In an experiment on 500 persons with						colds. In an experiment on 500 persons with				
cold, half of them where given placebo (sugar						cold, half of them where given placebo (sugar				
pills). The patients' reactions to the treatment are recorded in the following table:						pills). The patients' reactions to the treatment				

П_			1	1		1	
Treatment	Helped	Reaction	No				
			Effect				
Drug	150	30	70				
Placebo	130	40	80				
(Critical Valu	ue: 3.84)						
OR							
b) Illustrate	in deta	il about T	[10]	CO3	L3	PO1, PO12	
Hypothesis a	and Test th	e following:					
Two random	_						
			s arc.				
A: 16,17,25,2	26,32,34,3	88, 40,42					
B: 14,16,24,2	28,32, 35,	37, 42,43, 4	5,47				
Test whethe same varian							
(Critical Value		i level of s	igimicance.				
				-			
	A	ND					
a) The lengtl			omputora ia	[F]	603	12	DO1 DO13
c) The length	h of life X	of certain c	-	[5]	CO3	L3	PO1, PO12
approximate	h of life X ly normall	of certain c	d with mean	[5]	CO3	L3	PO1, PO12
approximatel 800 hours ar	h of life X ly normall nd standar	of certain c y distributed d deviation	d with mean 40 hours. If	[5]	CO3	L3	PO1, PO12
approximatel 800 hours ar a random s	h of life X ly normall nd standard ample of	of certain c y distributed d deviation	d with mean 40 hours. If ters has an	[5]	CO3	L3	PO1, PO12
approximatel 800 hours an a random s average life	h of life X ly normall nd standar ample of of 788	of certain c y distributed d deviation 30 comput hours, tes	d with mean 40 hours. If ters has an st the null	[5]	CO3	L3	PO1, PO12
approximatel 800 hours an a random s average life hypothesis t	h of life X ly normall nd standard ample of of 788 that $\mu = 8$	of certain c y distributed d deviation 30 comput hours, tes	d with mean 40 hours. If ters has an st the null against the	[5]	CO3	L3	PO1, PO12
approximatel 800 hours an a random s average life	h of life X ly normall nd standard ample of of 788 that $\mu = 800$	of certain c y distributed d deviation 30 comput hours, tes 300 hours	d with mean 40 hours. If ters has an st the null against the 5% level of	[5]	CO3	L3	PO1, PO12
approximatel 800 hours ar a random s average life hypothesis t alternate that	h of life X ly normall nd standard ample of of 788 that $\mu = 800$	of certain c y distributed d deviation 30 comput hours, tes 300 hours	d with mean 40 hours. If ters has an st the null against the 5% level of	[5]	CO3	L3	PO1, PO12
approximatel 800 hours ar a random s average life hypothesis t alternate that significance. OR	h of life X ly normall nd standard ample of of 788 that $\mu = 800$ (Critical V	d deviation of dev	d with mean 40 hours. If ters has an st the null against the 5% level of				
approximatel 800 hours ar a random s average life hypothesis to alternate that significance. OR d) Write	h of life X ly normall nd standard ample of of 788 that $\mu = 8$ t $\mu != 800$ (Critical V	d deviation and deviation of computed deviation and computed hours, tes and hours at 1 deviation and 1 deviati	d with mean 40 hours. If ters has an st the null against the 5% level of	[5]	CO3	L3	PO1, PO12
approximatel 800 hours ar a random s average life hypothesis talternate that significance. OR d) Write hypothesis ar	h of life X ly normall nd standard ample of of 788 that $\mu = 800$ (Critical V	d deviation of dev	d with mean 40 hours. If ters has an st the null against the 5% level of ween null s.				
approximatel 800 hours ar a random s average life hypothesis to alternate that significance. OR d) Write hypothesis ar A researcher	h of life X ly normall and standard ample of that μ = 8 that μ = 8 (Critical V the different and alternate the wants to	d of certain cy distributed deviation and compute hours, tes 800 hours to hours at 1 Value: 1.44)	d with mean 40 hours. If ters has an st the null against the 5% level of ween null s.				
approximatel 800 hours ar a random s average life hypothesis to alternate that significance. OR d) Write hypothesis ar A researcher students at second support to the students	the differ the different authors wants to school different authors with the different authors wants to school different authors wants authors wa	d of certain cy distributed deviation 30 comput hours, tes 300 hours 0 hours at 1 Value: 1.44)	d with mean 40 hours. If ters has an st the null against the 5% level of ween null s. he height of the national				
approximatel 800 hours ar a random s average life hypothesis to alternate that significance. OR d) Write hypothesis ar A researcher students at a average of 5	the differ the different authors wants to school different authors with the different authors wants to school different authors wants authors wa	d of certain cy distributed deviation 30 comput hours, tes 300 hours 0 hours at 1 Value: 1.44)	d with mean 40 hours. If ters has an st the null against the 5% level of ween null s. he height of the national				
approximatel 800 hours ar a random s average life hypothesis to alternate that significance. OR d) Write hypothesis ar A researcher students at second support to the students	the differ the different authors wants to school different authors wants aut	d of certain cy distributed deviation 30 comput hours, tes 300 hours 0 hours at 1 Value: 1.44)	d with mean 40 hours. If ters has an st the null against the 5% level of ween null s. he height of the national				