NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Business and Law
Program/s: SY BBA-LLB
Year: 2nd **Semester:** 3rd
Examination: End Semester Examination
Examination year: December - 2021

Course Code: MA155 **Course Name:** Quantitative Techniques 1 and 2
Date: 07/12/2021
Time: 11:30 am to 8:30 pm

Total Marks: 40
Total Pages: 2

nstructions:

→ *Write each answer on a new page.*
→ *Use of a calculator is permitted.*
→ *Draw all relevant waveforms in answer sheet only.*
→ ** COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping*

Q. No.	Details	Marks	COs*	BTL#
	Section – I			
Q.1	**Answer in short**	**[5]**		
(i)	A population in statistics means a collection of all people living in a country. (True / False)		CO1, CO2, CO3, CO4	1, 2, 3, 5
(ii)	A___ in statistics means a portion of the people selected from the population of an area.			
(iii)	Define "Frequency Distribution" for qualitative data.			
(iv)	Histogram can be drawn for qualitative data. (True / False)			
(v)	What is the difference between class width and class boundary?			
Q. 2	**Attempt Any Three:**	**[15]**		
(i)	Thirty adults were asked which of the following conveniences they would find most difficult to do without: television (T), refrigerator (R), air conditioning (A), public transportation (P), or microwave (M). Their responses are listed below. R A R P P T R M P A A R R T P P T R A A R P A T R P R A P R a. Prepare a frequency distribution table. b. Calculate the relative frequencies and percentages for all categories. c. What percentage of these adults named refrigerator or air conditioning as the convenience that they would find most difficult to do without? d. Draw a bar graph for the relative frequency distribution.		CO1, CO2, CO3, CO4	1, 2, 3, 4
(ii)	The following data give the total number of iPods® sold by a mail order company on each of 30 days. Construct a frequency distribution table. Draw the Histogram. 8 25 11 15 29 22 10 5 17 21 22 13 26 16 8 12 9 26 20 16 23 14 19 23 20 16 27 16 21 14			
(iii)	The following data give the numbers of computer keyboards assembled at the Twentieth Century Electronics Company for a sample of 25 days. 45 48 52 46 48 43 41 52 56 50 46 54 44 47 42 44 48 47 53 50 51 49 53 52 51 a. Make the frequency distribution table for these data. b. Calculate the relative frequencies for all classes. a. c. Construct a polygon for the relative frequency distribution.			
(iv)	The following table gives the frequency distribution of ages for all 50 employees of a company.			

Age	Number of Employees
18 to 30	12
31 to 43	19
44 to 56	14
57 to 69	5

a. Find the class boundaries and class mid points
b. Do all classes have the same width? If yes, what is that width?
c. Prepare the relative frequency and percentage distribution columns.
d. What percentage of the employees of this company are age 43 or younger?

Section – II			
Q. 3	**Attempt ANY 5 from the following:**	**[20]**	
(i)	Define arithmetic mean, median and mode. Determine arithmetic mean, median and mode for following number of new orders received by a company over the last 2 working days: 5, 3, 6, 5, 4, 5, 2, 8, 6, 5, 4, 8, 3, 4, 5, 4, 8, 2, 5, 4		

(ii) Find average marks of the following students using any one method as discussed in the class.

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
students	5	12	15	25	8	3	2

(iii) Runs scored by Martin Guptill and Daryl Mitchell in 7 innings of ICC WT20 2021 are as follows:

Inning	1	2	3	4	5	6	7
Martin Guptill	17	20	93	18	28	4	28
Daryl Mitchell	27	49	13	19	17	72	11

Find coefficient of variation of both players. Which player was more consistent?

(iv) Suppose two dice are thrown. The sum of numbers which come on the dice is noted. Consider following events:

A: The sum is even

B: The sum is multiple of 3

C: The sum is multiple of 4

D: The sum is greater than 11.

First list out all the sample points of all the events. Then decide and write which of the pairs is mutually exclusive. Explain why.

	CO5, CO6, CO7, CO8	1, 2, 3, 4, 5

(v) Define a sample space. Consider an experiment of tossing two coins.

(a) What will be the sample space in this experiment.?

(b) What is the probability that both coins show heads?

(c) What is the probability that the first one is head?

(d) What is the probability that both coins shows same output?

(vi) The following table lists the probability distribution of the number of breakdowns per week for a machine based in past data.

Breakdowns per week	0	1	2	3
Probability	0.15	0.20	0.35	0.30

Find the probability that the number of breakdowns for this machine during a given week is

(a) Exactly 3

(b) 1 or 2

(c) More than 1

(d) At most 2

(vii) Consider a binomial distribution with mean 4 and variance 4/3. Determine value of n, p and q. Then find $P(X \geq 1)$.

***********End of Question Paper***********