Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UPES

End Semester Examination, May 2024

Course: Biostatistics **Semester : II**

Program: BT-Bio Tech/BT-Food Tech **Duration : 3 Hours**

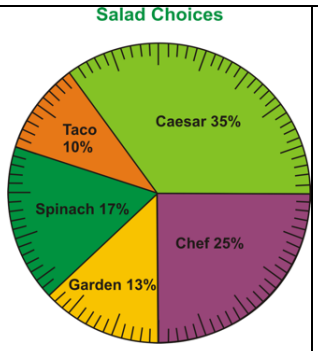
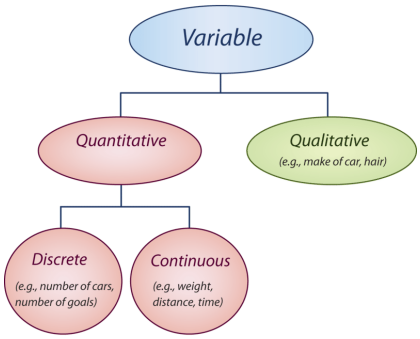
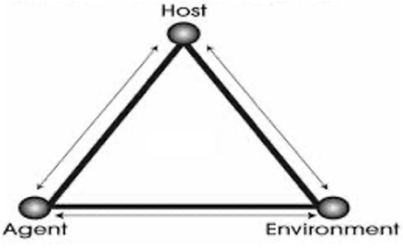
Course Code: HSCC1033 **Max. Marks: 100**

Instructions: Attempt all questions as per instructions given in each section. The scientific calculator, log files, are allowed.

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	COs
Q 1	Calculate the mean of the following dataset: 12, 15, 18, 20, 22. a) 15 b) 18 c) 19.4 d) 20	**1.5**	**CO2**
Q2	In a dataset with no repeating values, what can be said about the mode? a) There is no mode b) There is exactly one mode c) There can be multiple modes d) Mode is the same as the median	**1.5**	**CO3**
Q3	If the mean of a dataset is 25, what does this value represent? a) The most frequent value b) The middle value c) The average value d) The range of values	**1.5**	**CO2**
Q4	What value represents the mode in a frequency distribution? a) The value with the highest frequency b) The middle value c) The average value d) The smallest value	**1.5**	**CO3**
Q5	What does the term "disease spectrum" refer to? a) The range of diseases caused by viruses b) The severity of a disease c) The different stages of a disease d) The variety of symptoms and outcomes associated with a particular disease	**1.5**	**CO2+1**
Q6	Which of the following is a measure of data dispersion? a) Mean b) Median c) Range d) Mode	**1.5**	**CO3**

Q7	How is the range calculated? a) By subtracting the maximum value from the minimum value b) By dividing the dataset into quartiles c) By finding the difference between the mean and median d) By summing all the data values	**1.5**	**CO3**
Q8	What does a larger standard deviation indicate about the data? a) The data is more spread out b) The data is more clustered around the mean c) The data is more symmetrical d) The data is normally distributed	**1.5**	**CO4**
Q9	What is the primary characteristic of cross-sectional studies? a) They follow individuals over time to assess disease outcomes b) They compare individuals with and without a particular disease c) They collect data at a single point in time d) They involve randomization of participants into different groups	**1.5**	**CO4**
Q10	Calculate the mean of the following dataset: 10, 12, 13,15, 20, 25, 30. a) 10 b) 18 c) 20 d) 25	**1.5**	**CO4**
Q11	Calculate the median of the following dataset: 10, 15, 20, 25, 30. a) 10 b) 18 c) 20 d) 25	**1.5**	**CO4**
Q12	In a normal distribution, where is the mean located in relation to the median and mode? a) Mean = Median = Mode b) Mean > Median > Mode c) Mean < Median < Mode d) Mean = Median, but Mode can vary	**1.5**	**CO3**
Q13	Which type of epidemiological study is best suited for investigating rare diseases or outcomes? a) Cross-sectional study b) Case-control study c) Cohort study d) Experimental study	**1.5**	**CO2**
Q14	What does the median represent in a dataset? a) The most frequently occurring value b) The middle value c) The average value	**1.5**	**CO2**

	d) The value that separates the higher and lower halves of the dataset		
Q15	Which of the following is an example of quantitative data? a) Gender b) Blood type c) Height d) Eye color	**1.5**	**CO1**
Q16	What method is commonly used for collecting data through direct interaction with individuals? a) Observational studies b) Surveys c) Experiments d) Secondary data analysis	**1.5**	**CO2**
Q17	Which of the following is an example of qualitative data? a) Age of participants b) Height of individuals c) Gender of respondents d) Temperature in degrees Celsius	**1.5**	**CO1**
Q18	Blood type (e.g., A, B, AB, O) is an example of which type of data? a) Quantitative data b) Qualitative data c) Continuous data d) Nominal data	**1.5**	**CO3**
Q19	Which data collection method involves sending out written or electronic questionnaires to gather information from a large number of respondents? a) Surveys b) Experiments c) Observational studies d) Interviews	**1.5**	**CO2**
Q20	What type of data represent ordered categories or ranks? a) Quantitative data b) Qualitative data c) Continuous data d) Ordinal data	**1.5**	**CO3**
Section B (4Qx5M=20 Marks)			
Q 1	Explain the importance of informed consent in clinics.	**5**	**CO2**
Q 2	Describe stages of clinical phase trails with a table as discussed in the class.	**5**	**CO4**
Q 3	Draw normal and skewed distribution as discussed in class and label mean, median, and mode.	**5**	**CO3**
Q 4	Describe the rationale behind your decision to study biostatistics.	**5**	**CO1**
Section C (2Qx15M=30 Marks)			

Q 1	1.1.A new restaurant is opening in town, and the owner is trying very hard to complete the menu. He wants to include a choice of 5 salads and has presented his partner with the following pie chart to represent the results of a recent survey that he conducted of the town's people. The survey asked the question, "What is your favorite kind of salad?"  1. Which salad was the most popular choice? 2. Which salad was the least popular choice? 1.2. Define the qualitative variable and give examples.  **(10+5)**	**15**	**CO4**
Q 2	<table><tr><td>**No. of students**</td><td>2</td><td>5</td><td>7</td><td>9</td><td>12</td><td>17</td><td>16</td><td>2</td><td>1</td></tr><tr><td>**Biostatistics marks**</td><td>17</td><td>16</td><td>18</td><td>25</td><td>22</td><td>27</td><td>28</td><td>67</td><td>80</td></tr></table> a) Identify mean and median of this data. b) Justify your interpretations.	**15**	**CO4+2**
	Section D **(2Qx10M=20 Marks)**		
Q 1	A 22-year-old woman is admitted to the hospital with a headache, stiff neck and photophobia but an intact mental status. Lab test reveal cryptococcal meningitis, an infection commonly associated with HIV infection. When given the diagnosis, she adamantly refuses to be tested for HIV. a) Should she be tested anyway by the medical staff? b) Explain if yes or no and justify your answer.	**10**	**CO3+4**
Q 2	a) Identify the process "name" b) Describe the model as discussed in the class. Give any two example names.  	**10**	**CO1+2**