

Name:	 UPES UNIVERSITY WITH A PURPOSE
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2022

Course: Biostatistics and Epidemiology

Semester: 2

Program: Int. BM.Sc. & B.Sc. Food Nutrition and Dietetics, Clinical Research and B.Sc. Microbiology

Time : 03 hrs.

Course Code: HSCC2006

Max. Marks: 100

Instructions:

SECTION A

S. No.	Objective type or MCQs (1.5 marks each)	30 Marks	CO
1	Define Endemic	1.5	CO4
2	What do you mean by Morbidity Rate	1.5	CO2
3	What is Incidence	1.5	CO4
4	Stage of onset of symptoms occurs after a. Stage of susceptibility b. Stage of subclinical disease c. Stage of clinical disease d. Stage of recovery	1.5	CO1
5	Descriptive epidemiology include all except a. Person b. Time c. Place d. Cause	1.5	CO1
6	Which of the following is not a part of Hills criteria a. Strength of Association b. Analogy c. Experiment d. Probability	1.5	CO1
7	A study in which volunteers are randomly assigned to receive either a new medicine or the currently available medicine, and are followed to monitor for side effects and effectiveness of each medicine, is an example of which type of study? A. Clinical trial B. Observational	1.5	CO4

	C. Cohort D. Case-control		
8	In COVID-19 pandemic, 3200 cases were identified on 8 th May 2021 in dehradun. On the same day 60 people died. Calculate the death to case ratio.	1.5	CO4
9	What do you mean by informed consent	1.5	CO2
10	_____ is a type of review that uses repeatable analytical methods to collect secondary data and analyse it.	1.5	CO2
11	The Uttarakhand Women's Health Study, in which researchers enrolled 48,000 women in 2008 and collected exposure and lifestyle information to assess the relationship between these factors and subsequent occurrence of cancer, is an example of which type(s) of study? A. Experimental B. Observational	1.5	CO2
12	What is the range of age for a neonate.	1.5	CO2
13	The sum of deviations taken from mean is: A. Standard Deviation B. Mean Deviation C. Range D. Interquartile Range	1.5	CO4
14	The interquartile range of 48, 45, 54, 43, 51, 49, 38, 41, 37, 42, 46 is: A. 4 B. 7 C. 8 D. 0.089	1.5	CO4
15	The point of intersection of less than and more than ogives gives the value of: A. Mean B. Median C. Mode D. Harmonic Mean	1.5	CO4
16	If in a moderately asymmetrical frequency distribution, the values of median and mean are 72 and 78 respectively. Find the value of mode.	1.5	CO4
17	Calculate the coefficient of correlation, if the regression coefficient of y on x is (-0.28) and regression coefficient of x on y is (-2.06).	1.5	CO4
18	Method of selecting samples according to certain laws of probability in which each unit of population has some definite probability of being selected in the sample is known as:	1.5	CO5

	a) Systematic sampling b) Cluster sampling c) Probability sampling or Random sampling d) Probability or systematic sampling		
19	Which distribution can be used if number of trials is finite and fixed: (a) Poisson distribution (b) Normal Distribution (c) Bernoulli distribution (d) Binomial distribution	1.5	CO5
20	Write the steps to draw bar diagram in MS Excel.	1.5	CO5

SECTION B the word limit 20 marks 4 questions 5 marks each

Q	Short Answer Type Question (5 marks each) Scan and Upload 4 questions 5 marks each	20 Marks	CO																						
1	Discuss randomized control trial as a part of experimental epidemiology	5	CO2																						
2	Write the classification of epidemiological studies	5	CO1																						
3	Following data relate to the intake of proteins and gain in body weight of 10 albino rats: <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Protein intake (gm)/day 'x'</td> <td>10</td><td>11</td><td>12</td><td>14</td><td>16</td><td>13</td><td>15</td><td>12</td><td>13</td><td>17</td> </tr> <tr> <td>Gain in weight (gm) 'y'</td> <td>12</td><td>15</td><td>16</td><td>22</td><td>24</td><td>18</td><td>23</td><td>14</td><td>20</td><td>25</td> </tr> </table> $\sum xy = 2601, \sum x^2 = 1813, \sum x = 133, \sum y = 189, \sum y^2 = 3759$ <p>With the help of above values, find the Karl Pearson's coefficient of correlation</p>	Protein intake (gm)/day 'x'	10	11	12	14	16	13	15	12	13	17	Gain in weight (gm) 'y'	12	15	16	22	24	18	23	14	20	25	5	CO4
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4	A random sample of size 16 has 53 as mean. The sum of squares of the deviations taken from mean is 150. Can this sample be regarded as taken from the population having 56 as mean?	5	CO5																						

SECTION C 30 marks

Q	Two case studies 15 marks each subsections	30 Marks	CO																												
1	Case Study To assess the significance of possible variation in performance of an antibiotic after its administration to TB patients of different hospitals of a city, a common test was performed on a number of patients taken at random from each of the four hospitals. The results are given below. Prepare an analysis of variance data. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="4">Hospital</th> </tr> <tr> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>12</td> <td>18</td> <td>13</td> </tr> <tr> <td>10</td> <td>11</td> <td>12</td> <td>9</td> </tr> <tr> <td>12</td> <td>9</td> <td>16</td> <td>12</td> </tr> <tr> <td>8</td> <td>14</td> <td>6</td> <td>16</td> </tr> <tr> <td>7</td> <td>4</td> <td>8</td> <td>15</td> </tr> </tbody> </table>	Hospital				A	B	C	D	8	12	18	13	10	11	12	9	12	9	16	12	8	14	6	16	7	4	8	15	15	CO4
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	Tabulated value of $F_{0.05}$ for (3,16) degree of freedom is 3.24.																						
2	<p>Case Study 2</p> <p>PART A.</p> <p>Classify each of the following studies as:</p> <p>A. Sporadic disease B. Endemic disease C. Hyperendemic disease D. Pandemic disease E. Epidemic disease</p> <p>_____ 1. 22 cases of legionellosis occurred within 3 weeks among residents of a particular neighborhood (usually 0 or 1 per year)</p> <p>_____ 2. Average annual incidence was 364 cases of pulmonary tuberculosis per 100,000 population in one area, compared with national average of 134 cases per 100,000 population</p> <p>_____ 3. Millions of people worldwide died from influenza virus in 1918</p> <p>_____ 4. Single case of histoplasmosis was diagnosed in a community</p> <p>_____ 5. About 60 cases of gonorrhoea are usually reported in this region per week, slightly less than the national average</p>	15	CO1/ CO4																				
	SECTION- D 20 marks																						
Q	Long Answer type Questions Scan and Upload (10 marks each) word limit	20 Marks	CO																				
1	You are an epidemiologist and your department has appointed you to collect data from 150 people in your society. Build a questionnaire to assess the correlation between exercise and obesity	10	CO2																				
2	<p>Following data relate to the number of patient's stay in the hospital. Find mean median and mode.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No. of days admitted</th> <th>0-5</th> <th>5-10</th> <th>10-15</th> <th>15-20</th> <th>20-25</th> <th>25-30</th> <th>30-35</th> <th>35-40</th> <th>40-45</th> </tr> </thead> <tbody> <tr> <td>No. of patients</td> <td>29</td> <td>195</td> <td>241</td> <td>117</td> <td>52</td> <td>10</td> <td>6</td> <td>3</td> <td>2</td> </tr> </tbody> </table>	No. of days admitted	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	No. of patients	29	195	241	117	52	10	6	3	2	10	CO4
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