

Roll No.
SAP ID



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020
Open Book – Through Blackboard Learning Management System

Course: Quantitative Techniques for Decision Making
Programme: B.Sc LLB (Hons.), 2019

Course code: CLNL1005
Semester: II

Time: 03 hrs.

Max. Marks: 100

Instructions:

As this examination is in open-book format, the students are expected to demonstrate a very high degree of Academic Integrity and not copy contents from resources referred. Instructors would look for understanding of the concept by the students and any similarity found from resources online/ offline shall be penalized in terms of deduction of marks and even cancellation of paper in requisite cases. The online examination committee of the School would also look for similarity of two answer scripts and if answer scripts of two or more students are found similar, both the answer scripts shall be treated as copied and lead to cancellation of the paper. In view of the aforesaid points, the students are warned that they should desist from using any unfair means.

**All Questions are Compulsory
Answer each question**

S. No.		Marks	CO
1	I. Define a) Event space b) Exhaustive set of events II. Define probability theorem of addition. III. Define coefficient of range and coefficient of Quartile deviation of a data. IV. Define index number.	4×5 =20	CO1
2	I. The odds that A speaks the truth is 4:3 and the odds that B speaks the truth is 6:5. In what percentage of cases are they likely to contradict each other on an identical point? II. Suppose that there is a chance for a newly constructed house to collapse whether the design is faulty or not. The chance that the design is faulty is 10%. The chance that the house collapses if the design is faulty is 95% and otherwise it is 45%. It is seen that a house collapsed. What is the probability that it is due to faulty design?	2×10= 20	CO2
3	Based on the frequency distribution given below, compute the following statistical measures to characterize the distribution: i) Standard deviation, ii) Coefficient of variation, iii) Variance	20	CO3

	<table border="1" data-bbox="204 353 1259 869"> <thead> <tr> <th data-bbox="204 353 732 443">Annual Tax paid (Rs. Thousand)</th> <th data-bbox="732 353 1259 443">No. of managers</th> </tr> </thead> <tbody> <tr> <td data-bbox="204 443 732 499">5-10</td> <td data-bbox="732 443 1259 499">18</td> </tr> <tr> <td data-bbox="204 499 732 555">10-15</td> <td data-bbox="732 499 1259 555">30</td> </tr> <tr> <td data-bbox="204 555 732 611">15-20</td> <td data-bbox="732 555 1259 611">46</td> </tr> <tr> <td data-bbox="204 611 732 667">20-25</td> <td data-bbox="732 611 1259 667">28</td> </tr> <tr> <td data-bbox="204 667 732 723">25-30</td> <td data-bbox="732 667 1259 723">20</td> </tr> <tr> <td data-bbox="204 723 732 779">30-35</td> <td data-bbox="732 723 1259 779">12</td> </tr> <tr> <td data-bbox="204 779 732 869">35-40</td> <td data-bbox="732 779 1259 869">6</td> </tr> </tbody> </table>	Annual Tax paid (Rs. Thousand)	No. of managers	5-10	18	10-15	30	15-20	46	20-25	28	25-30	20	30-35	12	35-40	6															
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4	<p data-bbox="178 913 1284 987">For the following data, calculate the price index number using Laspeyre's method (Base Year: 2008):</p> <table border="1" data-bbox="178 1010 1233 1294"> <thead> <tr> <th data-bbox="178 1010 288 1122" rowspan="2">Commodity</th> <th colspan="2" data-bbox="288 1010 762 1055">2008</th> <th colspan="2" data-bbox="762 1010 1233 1055">2009</th> </tr> <tr> <th data-bbox="288 1055 528 1122">Price</th> <th data-bbox="528 1055 762 1122">Quantity</th> <th data-bbox="762 1055 1002 1122">Price</th> <th data-bbox="1002 1055 1233 1122">Quantity</th> </tr> </thead> <tbody> <tr> <td data-bbox="178 1122 288 1160">A</td> <td data-bbox="288 1122 528 1160">20</td> <td data-bbox="528 1122 762 1160">8</td> <td data-bbox="762 1122 1002 1160">40</td> <td data-bbox="1002 1122 1233 1160">6</td> </tr> <tr> <td data-bbox="178 1160 288 1198">B</td> <td data-bbox="288 1160 528 1198">50</td> <td data-bbox="528 1160 762 1198">10</td> <td data-bbox="762 1160 1002 1198">60</td> <td data-bbox="1002 1160 1233 1198">5</td> </tr> <tr> <td data-bbox="178 1198 288 1236">C</td> <td data-bbox="288 1198 528 1236">40</td> <td data-bbox="528 1198 762 1236">15</td> <td data-bbox="762 1198 1002 1236">50</td> <td data-bbox="1002 1198 1233 1236">15</td> </tr> <tr> <td data-bbox="178 1236 288 1294">D</td> <td data-bbox="288 1236 528 1294">20</td> <td data-bbox="528 1236 762 1294">20</td> <td data-bbox="762 1236 1002 1294">20</td> <td data-bbox="1002 1236 1233 1294">25</td> </tr> </tbody> </table>	Commodity	2008		2009		Price	Quantity	Price	Quantity	A	20	8	40	6	B	50	10	60	5	C	40	15	50	15	D	20	20	20	25	20	CO4
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5	<p data-bbox="199 1379 1201 1417">Below are given the figures of production (in million tons) of a sugar factory:</p> <table border="1" data-bbox="209 1473 1284 1585"> <thead> <tr> <th data-bbox="209 1473 464 1512">Year</th> <th data-bbox="464 1473 584 1512">1999</th> <th data-bbox="584 1473 687 1512">2000</th> <th data-bbox="687 1473 791 1512">2001</th> <th data-bbox="791 1473 895 1512">2002</th> <th data-bbox="895 1473 999 1512">2003</th> <th data-bbox="999 1473 1102 1512">2004</th> <th data-bbox="1102 1473 1284 1512">2005</th> </tr> </thead> <tbody> <tr> <td data-bbox="209 1512 464 1585">Production in (m. tons)</td> <td data-bbox="464 1512 584 1585">40</td> <td data-bbox="584 1512 687 1585">45</td> <td data-bbox="687 1512 791 1585">46</td> <td data-bbox="791 1512 895 1585">42</td> <td data-bbox="895 1512 999 1585">47</td> <td data-bbox="999 1512 1102 1585">49</td> <td data-bbox="1102 1512 1284 1585">46</td> </tr> </tbody> </table> <p data-bbox="178 1630 1259 1668">Fit a straight line trend by the method of least squares and tabulate the trend values.</p>	Year	1999	2000	2001	2002	2003	2004	2005	Production in (m. tons)	40	45	46	42	47	49	46	20	CO4													
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