PCB1F06 - Quantitative Techniques

P. Pages : 2   **GUG/W/23/10679**

Time : Three Hours   ║║║║║║║║║║║║║   Max. Marks : 70
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Notes : 1. Attempt **any five** questions.
        2. All questions carry equal marks.

1. 20% of workers in a firm, employing a total of 4,000 workers, earn less than ₹4 per hour, **14**
880 earn from ₹4 to ₹4.24 per hour, 24% earn from ₹4.25 to ₹4.49 per hour, 740 earn from
₹4.50 to ₹4.74 per hour, 12% earn from ₹4.75 to ₹4.99 per hour and rest earn ₹5 or more
per hour, set up a frequency table and calculate mean, median & mode.

2. The following results for height and weights of 100 men were calculated.   **14**

Particular	Height Inch	Weight kg
Mean	68"	150
Standard deviation	2.5"	20

Coefficient of correlation = 0.6

Find an estimate,
i)   The weight of man whose height is 5' (feet)
ii) Height of a man whose weight is 200 kg.

3. Fit a straight line trend by the Least square method and calculate trend values & forecast   **14**
the production of year 2023 & Find the monthly increase in production.

Year	2016	2017	2018	2019	2020	2021	2022
Production (1000 tonns)	77	88	94	85	91	98	90

4. A certain output is manufactured at ₹80 and sold at ₹140 per unit. The product is such that   **14**
if it is produced but not sold during a day's time it become worthless. The daily sales
records in the past are as follows:

Sales per day   30   40   50   60   70
No. of days   24   24   36   24   12

Calculate
i)   EMV   ii) EOL   iii) EVPI

5.   Five different machines can do any of the 5 required jobs, with different profits   **14**
resulting from each assignment as shown in table. Find out maximum profit possible
through optimal assignment.

Job \ Machines	A	B	C	D	E
1	30	37	40	28	40
2	40	24	27	21	36
3	40	32	33	30	35
4	25	38	40	36	36
5	29	62	41	34	39

6. From the following transportation problem, find the initial solution by VAM & test the optimality by MODI method. **14**

From / To	1	2	3	Supply
A	8	16	16	152
B	32	48	32	164
C	16	32	48	154
Demand	144	204	82	

7. An animal feed company must produce 200 kg of a mixture consisting of ingredient X_1 and X_2 daily, X_1 cost ₹3 per kg and X_2 ₹8 per kg. No more than 80 kg of X_1 can be used, and at least 60 kg of X_2 must be used. Find how much of each ingredient should be used if the company wants to minimize cost. **14**

8. "Linear programming is one of the most frequently and successfully applied mathematical approach to managerial decisions" comment. **14**

9. "Markov analysis is a method of analyzing the present behaviour of a certain variable in an attempt to predict the behaviour of the same variable in the future." Discuss. **14**

10. Write short note on **any two.** **14**

a) The purpose and procedure of the simplex method.
b) The methods of computing Dispersion.
c) Karl Pearson's coefficient of correlation.
d) Decision tree.

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