SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Com. - END SEMESTER EXAMINATIONS - NOV'2024
SEMESTER - I
24UCOAT1001 - Business Statistics and Operations Research- I

Total Duration : 2 Hrs.30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. The following table shows the area in millions of square kilometers of the oceans of the world:

Ocean	**Area (million sq.km)**
Pacific	70.8
Atlantic	41.2
Indian	28.5
Antarctic	7.6
Arctic	4.8

Draw a pie diagram to represent the data.

2. Calculate the coefficient of correlation between age of cars and annual maintenance cost and comment.

Age of cars (years)	**Annual maintenance cost (Rupees)**
2	1,600
4	1,500
6	1,800
7	1,900
8	1,700
10	2,100
12	2,000

3. Classify the components of time series.

4. Mark the feasible region represents by constraint in equations of a linear optimizing function $z = x_1 + x_2$
$x_1 + x_2 \leq 1$
$3x_1 + x_2 \geq 3$
$x_1 + x_2 \geq 0$

Contd...

5. Calculate the median from the following table:

Marks	Frequency
10-25	6
25-40	20
40-55	44
55-70	26
70-85	3
85-100	1

6. From the following data of the rainfall and production of rice, find the most likely production corresponding to the rainfall of 40".

	Rainfall (inches)	Production (Quintals)
Mean	35	50
Standard deviation	5	8
Coefficient of correlation $= +0.8$		

7. Assuming a four-yearly cycle calculate the trend by the method of moving averages from the following data relating to the production of tea in India.

Year	Production (in million Lbs)
2006	464
2007	515
2008	518
2009	467
2010	502
2011	540
2012	557
2013	571
2014	586
2015	612

8. Given the restrictions
   $x \geq 0$, $y = \geq 0$
   $2x + y \leq 20$
   $X + 2y \leq 20$
   Indicate the feasible region on a graph and maximum the function $x + 3y$.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Describe the functions of statistics.

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10. Calculate the range and semi-inter quartile range of wages.

Wages (Rs.)	**Labourers**
30-32	12
32-34	18
34-36	16
36-38	14
38-40	12
40-42	8
42-44	6

Also calculate the quartile coefficient of dispersion.

11. Ten competitions in a beauty contest are ranked by three judges in the following order:

I Judge	1	5	4	8	9	6	10	7	3	2
II Judge	4	8	7	6	5	9	10	3	2	1
III Judge	6	7	8	1	5	10	9	2	3	4

Use rank correlation coefficient to discuss which pair of judges have the nearest approach to common tastes in beauty.

12. The following table gives the sterling assets of the R.B.I in crores of rupees; fit a straight-line trend.

Year	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Assets	83	92	71	90	169	191

Also estimate the figures for 2019-20.

13. A firm makes two types of furniture; chairs and tables. The contribution for each product as calculated by the accounting department is Rs.20 per chair and Rs.30 per table. Both products are processed on three machines M1, M2 and M3. The time required by each product and the total time available per week on each machine is as follows:

Machine	**Chair**	**Table**	**Available hours**
M1	3	3	36
M2	5	2	50
M3	2	6	60

How should the manufactures schedule his production in order to maximise contribution?

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