

Model Question Paper
Applied Statistics - Part I

12th Standard

Business Maths

Reg.No. :

--	--	--	--	--	--

- I. Answer all the questions.
II. Use blue pen only.
III. Question number 15 is compulsory.

Time : 01:30:00 Hrs

Total Marks : 95

5 x 1 = 5

Part-A

- 1) A time series is a set of data recorded
(a) periodically (b) at equal time intervals (c) at successive points of time (d) all the above
- 2) A time series consists of
(a) two components (b) three components (c) four components (d) none of these
- 3) The component of a time series attached to long term variation is termed as
(a) cyclic variations (b) secular trend (c) irregular variation (d) all the above
- 4) The component of a time series which is attached to short term fluctuations is
(a) seasonal variation (b) cyclic variation (c) irregular variation (d) all the above
- 5) Cyclic variations in a time series are caused by
(a) lock out in a factory (b) war in a country (c) floods in the states (d) none of these

Part-B

5 x 6 = 30

- 6) A company produces two types of products say type A and B. Profits on the two types of product are Rs.30/- and Rs.40/- per kg. respectively. The data on resources required and availability of resources are given below.

Capacity	Requirements		available per month
	Product A	Product B	
Raw materials(kgs)	60	120	12000
Machining hours/piece	8	5	600
Assembling (man hours)	3	4	500

Formulate this problem as a linear programming problem to maximize the profit.

- 7) A firm manufactures two products A & B on which the profits earned per unit are Rs.3 and Rs.4 respectively. Each product is processed on two machines M_1 and M_2 . Product A requires one minute of processing time on M_1 and two minutes on M_2 , while B requires one minute on M_1 and one minute on M_2 . Machine M_1 is available for not more than 7 hrs 30 minutes while M_2 is available for 10 hrs during any working day. Formulate this problem as a linear programming problem to maximize the profit.
- 8) From the following data, compute the correlation co-efficient. $N = 11, \Sigma X = 117, \Sigma Y = 260, \Sigma x^2 = 1313, \Sigma y^2 = 6580, \Sigma XY = 2827$
- 9) Draw a trend line by graphic method (freehand)

Year	1995	1996	1997	1998	1999	2000	2001
Production	20	22	25	26	25	27	30

- 10) Draw a trend line by graphic method

Year	1997	1998	1999	2000	2001
Production	20	24	25	38	60

Part-C

6 x 10 = 60

- 11) Solve the following, using graphical method Maximize $z = 45x_1 + 80x_2$ subject to the constraints $5x_1 + 20x_2 \leq 400$ $10x_1 + 15x_2 \leq 450$ $x_1, x_2 \geq 0$
- 12) Solve the following, using graphical method Maximize $Z = 3x_1 + 4x_2$ subject to the constraints $2x_1 + x_2 \leq 40$ $2x_1 + 5x_2 \leq 180$ $x_1, x_2 \geq 0$
- 13) Solve the following, using graphical method Minimize $z = 3x_1 + 2x_2$ subject to the constraints $5x_1 + x_2 \geq 10$ $2x_1 + 2x_2 \geq 12$ $x_1 + 4x_2 \geq 12$ $x_1, x_2 \geq 0$
- 14) Calculate the correlation co-efficient from the following data.

X:	12	9	8	10	11	13	7
Y:	14	8	6	9	11	12	3

- 15) a) Find the co-efficient of correlation for the data given below.

X:	10	12	18	24	23	27
Y:	13	18	12	25	30	10

(OR)

- b) From the data given below, find the correlation co-efficient.

X:	46	54	56	56	58	60	62
Y:	36	40	44	54	42	58	54
