

POST-GRADUATE COURSE

Term End Examination — December, 2007

M.Com.

BASIC STATISTICAL CONCEPT & TOOLS

PAPER VII

Time — 2 hours

Full marks—50

(Weightage of marks—80%)

Special credit will be given for accuracy and relevance in the answer. Marks will be deducted for incorrect spelling, untidy work and illegible handwriting. The weightage for each question has been indicated in the margin.

Module I

Answer any two questions.

1.(a)Lives of two models of refrigerators in a recent survey are :

Life (No. of years)	No. of refrigerators	
	Model A	Model B
0 - 2	5	2
2 - 4	16	7
4 - 6	13	12
6 - 8	7	19
8 - 10	5	9
10 - 12	4	1

What is the average life of each model of these refrigerators ? Which model has greater uniformity ?

W-75

P.T.O.

PG CO-VII

(2)

(b) Show that standard deviation is independent of change of origin but depends on scale. 8½+4

2.(a) Compute suitable averages from the following frequency distribution :

Monthly income :

(1000 Rs.)	below 2	2 - 4	4 - 6	6 - 8	8 - 10	10 - 12	12 - 14	above 14
No. of families	5	12	30	42	48	31	18	10

8

(b) Compute Sperman's rank correlation from the following data and comment :

Candidate :	A	B	C	D	E	F	G	H
Rank by Judge-I :	5	2	8	1	4	6	3	7
Rank by Judge-II :	4	5	7	3	2	8	1	6

4½

3. You are given that the variance of  $x$  is 9. The regression equations are  $8x - 10y + 66 = 0$  and  $40x - 18y = 214$ . Find

- (a) Average values of  $x$  and  $y$ .
- (b) Correlation coefficient between two variables.
- (c) Standard deviation of  $y$ .
- (d) Most probable value of  $y$  when  $x = 25$ .

12½

4.(a) Using suitable interpolation formula, calculate the value of  $y$  when  $x = 25$ .

$x :$	7	11	15	19	23	27
$y :$	20256	20625	21296	22407	24098	26511

8

(b) Find whether attributes A and B are independent, positively or negatively associated in the cases  $N = 1000, f_A = 470, f_B = 620, f_{AB} = 320$ . 4½

P.T.O.

W-75

(3)

PG CO-VII

Module II

Answer any two questions.

5.(a)What is chain base method of construction of index numbers and how does it differ from fixed base method.

(b) Calculate Laspeyres' and Paasche's price index numbers from the following data :

Commodity	Base Year		Current Year	
	Price	quantity	Price	quantity
A	50	200	65	180
B	70	300	82	275
C	60	220	78	250
D	20	160	27	170

6. Compute seasonal indices by suitable method from the following data :

Year / Quarter	I	II	III	IV
2004	135	185	160	229
2005	143	205	180	259
2006	152	231	195	279

7. The values of sample mean ( $\bar{x}$ ) and the ranges (R) for 10 samples of size 5 each are given below. Draw appropriate mean chart and comment on the state of control of the process.

Sample No. :	1	2	3	4	5	6	7	8	9	10
$\bar{x}$ :	25	29	23	26	28	31	25	22	29	24
R :	6	5	4	6	5	4	7	8	4	6

12½

P.T.O.

PG CO-VII

(4)

8. Write short notes on any 3 from the following :

(a) Index number formulae.

(b) Multiple and partial correlation.

(c) Scatter diagram.

(d) Total quality management.

(e) Moving average method.

(f) Relative dispersion.

3x4+½