

POST-GRADUATE COURSE

Term End Examination — December, 2008

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 : $12\frac{1}{2} \times 2 = 25$

- 1.(a) The following table gives the distribution of income of households based on hypothetical data :

Monthly Income (Rs)	No. of households
below 1000	37
1000 - 2000	85
2000 - 3000	103
3000 - 4000	121
4000 - 5000	148
5000 - 6000	159
6000 - 7000	142
7000 - 8000	104
8000 - 9000	80
10,000 and above	40

Compute suitable measures of central tendency and dispersion.

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(2)

- (b) For a set of observations 25, 32, 40 and 53, show that
A.M. \geq G.M. \geq H.M. $8 + 4\frac{1}{2} = 12\frac{1}{2}$

- 2.(a) You are given the following information relating to a distribution comprising of 10 observations.

$$\bar{X} = 5.5$$

$$\bar{Y} = 4.0$$

$$\sum X^2 = 385$$

$$\sum Y^2 = 192$$

$$\sum (X + Y)^2 = 947$$

Compute correlation coefficient.

- (b) For the data set used in (a) compute the regression line of Y on X and hence compute the estimated value of Y when X = 7.3. $6\frac{1}{2} + 6 = 12\frac{1}{2}$

- 3.(a) In a co-education institution, out of 200 students, 150 were boys. In an examination 120 boys and 40 girls passed. Find whether there is any association between gender and success.

- (b) Briefly describe the following

(i) Relative dispersion.

(ii) Rank correlation.

(iii) Extrapolation.

$$6\frac{1}{2} + 3 \times 2 = 12\frac{1}{2}$$

- 4.(a) Compute Spearman's rank correlation coefficient and comment :

Candidate	A	B	C	D	E	F	G	H
Judges								
I	5	2	8	1	4	6	3	7
II	4	5	7	3	2	8	1	6

- (b) The following table gives the expectation of life at different ages. Find the expectation of life at age 33.
Age (years) : 25 35 45 55 65
Expectation of : 34 26 18 12 8
life (yrs)

$$4 + 8\frac{1}{2} = 12\frac{1}{2}$$

(3)

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Module II

Answer any two questions :

12½×2=25

5. The following figures give the number of defectives in 20 samples each containing 500 items :

43, 41, 22, 34, 25, 32, 37, 27, 16, 25, 17, 32, 29, 22, 27, 21, 36, 24, 33, 26.

Construct the control chart for fraction defective and comment on the state of control with additional five observations 31, 42, 23, 19, 27. 12½

6.(a) Explain the Time Reversal Test and Factor Reversal Test of index number and examine whether Fisher's index number satisfy these tests.

(b) From the following figures determine the relative importance of the food group, given that the cost of living index number for 2005 with 1990 on the base is 375.

Group	% increase	Weight
Food	165	—
Clothing	290	12
Fuel and Light	120	18
House rent	170	10
Miscellaneous	150	18

6½+6=12½

7.(a) What is a cyclical component of a time series. How do seasonal variations differ from them? What are the different methods available to compute seasonal variation.

(b) Write short notes on the following :

(i) Real wage or Real income.

(ii) Deseasonalized data.

(iii) Rational Subgroup.

6½+3×2=12½

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(4)

8. Using suitable method, determine seasonal indices for the following data :

Year	Quarter			
	I	II	III	IV
2003	30	40	36	34
2004	40	58	54	48
2005	54	76	68	62
2006	80	92	86	82

12½

Group	% increase	Weight
Food	165	—
Clothing	290	12
Fuel and Light	120	18
House rent	170	10
Miscellaneous	150	18

6½+6=12½

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P.T.O.