POST-GRADUATE COURSE

Term End Examination : June, 2017

COMMERCE

Paper-VII : Basic Statistical Concepts & Tools

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) Mention the merits and demerits of Mode.

   b) Show that the standard deviation is the smallest root mean square deviation.

   c) Why is 'coefficient of variation' considered as a better measure of dispersion as compared to 'standard deviation' ?

   $$4 + 4 + 4\frac{1}{2}$$

2. a) Narrate the major properties of simple regression coefficients.

   b) Given :

   $$r_{12} = 0 \cdot 7, \ r_{13} = 0 \cdot 8, \ r_{23} = -0 \cdot 9.$$

   Examine the validity of the above correlation coefficients.

   c) Distinguish between $r_{23\cdot1}$ and $b_{23\cdot1}$.

   $$4\frac{1}{2} + 4 + 4$$

3. a) Derive Lagrange's interpolation formula.

   b) Given :

x :	22	24	26	28	30
$f(x)$:	500	800	1100	1450	1800

   Ascertain the value of $f(23\cdot28)$.　　$8 + 4\frac{1}{2}$

4. a) 800 candidates of both sexes appeared in an examination. The boys outnumbered the girls by 15% of the total. The number of candidates who passed, exceed the number of candidates who failed by 480. Equal number of boys and girls failed in the examination. Examine whether there is any relationship between sex and success in the examination.

b)   Distinguish between Yule's co-efficient of association and proportion method.

c)   If $S = (AB) - (AB)_0$, show that

$$\delta = \frac{1}{N} \left[(AB) \ (\alpha\beta) - (A\beta) \ (\alpha B) \right].$$

$$4\frac{1}{2} + 4 + 4$$

MODULE – II

Answer any *two* questions : $12\frac{1}{2} \times 2 = 25$

5.   Define cost of living index. State its uses. Discuss, in brief, the steps involved in its construction. $3 + 3 + 6\frac{1}{2}$

6.   a)   The straight line annual trend equation fitted to annual production ('000 units) is given by y = 300 + 216 t with origin at December, 2013 – January, 2014 and unit of t = 6 months. Determine the straight line monthly trend equation and find trend value for the month of September, 2017.

b)   State the major models of time series.

$$6\frac{1}{2} + 6$$

7.   Explain the following terms in the context of S. Q. C :

(i)   Control charts

(ii)   Acceptance Plan. $6 + 6\frac{1}{2}$

8.   Write short notes on any *two* of the following:

$$6\frac{1}{4} \times 2 = 12\frac{1}{2}$$

a)   Co-efficient of multiple determination

b)   Complete association

c)   Range chart

d)   Yule's coefficient of colligation.