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III Semester B.Com. Examination, Nov./Dec. 2014
(New Syllabus) (2013-14 and Onwards) (F + R)
COMMERCE

3.6 : Quantitative Analysis For Business Decisions – II

Time : 3 Hours

Max. Marks : 100

Instruction : Answers should be written **fully** in **English** or **Kannada**.

SECTION – A

Answer **any ten** sub-questions. **Each** question carries **two** marks.

(10×2=20)

1. a) Distinguish between correlation and regression.
- b) Mention the uses of correlation.
- c) State the assumptions of Karl Pearson's co-efficient of correlation.
- d) Calculate two regression co-efficients when $r = 0.8$, $\sigma_x = 5$ and $\sigma_y = 7$.
- e) What are the uses of analysis of time series ?
- f) Define time series. What are its components ?
- g) Distinguish between interpolation and extrapolation.
- h) Expand $(y - 1)^5$.
- i) What are the conditions on which Binomial expansion method of interpolation is applied ?
- j) If two regression coefficients are 1.2 and 0.8, find correlation through regression co-efficient.
- k) What is Random sampling ?
- l) Define probability.

P.T.O.



SECTION – B

Answer **any four** of the following. **Each** question carries **eight** marks. (4×8=32)

2. From the following table find correlation co-efficient between age and percentage of players of students.

| | | | | | |
|-----------------------|----|----|----|----|----|
| Age (in years) | 16 | 17 | 18 | 19 | 20 |
| Percentage of players | 70 | 50 | 40 | 30 | 10 |

3. Interpolate the production for the year 2005.

| | | | | | | | |
|-----------------------------|------|------|------|------|------|------|------|
| Year | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 |
| Production (in '000 tonnes) | 20 | 22 | 26 | 30 | 35 | ? | 43 |

4. Fit the straight line trend to the following figures by the method of least squares :

| | | | | | | |
|------------------------|------|------|------|------|------|------|
| Year | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| Sales (in '000 tonnes) | 50 | 60 | 65 | 63 | 68 | 70 |

5. From a pack of playing cards a card is drawn at random. What is the probability that it is :
- Red
 - Queen
 - Either queen or Ace
 - A spade or a king.
6. If the population standard deviation is 150. What should be the sample size to estimate population means with allowable error 10 at (a) 90% confidence level (b) 95% confidence level.

Note : At 90% value of confidence co-efficient is 1.64 and at 95% value of confidence co-efficient is 1.96.



SECTION – C

Answer **any three** of the following. **Each** question carries **sixteen** marks. **(3×16=48)**

7. From the following table find the number of students who have obtained less than 55 marks using Newton's method :

| Marks | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
|-----------------|-------|-------|-------|-------|-------|
| No. of Students | 31 | 42 | 51 | 35 | 31 |

8. The number of units of a product exported during 2005-2012 are given below. Compute the trend values by the method of least squares and prove that $\sum (y - y_c) = 0$.

| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-------------------------|------|------|------|------|------|------|------|------|
| Exports (₹ in lakhs) | 24 | 26 | 26 | 32 | 38 | 46 | 42 | 46 |

9. Following are the results of B.Com. examination of a college. Calculate the Karl Pearson's co-efficient of correlation between the age and success of candidates.

| Age (in years) | 14-15 | 15-16 | 16-17 | 17-18 | 18-19 | 19-20 | 20-21 |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| No. of Candidates appeared | 300 | 100 | 50 | 150 | 400 | 250 | 150 |
| No. of Candidates passed | 180 | 65 | 34 | 90 | 250 | 145 | 81 |



10. A survey was conducted to study the relationship between sales (X) and advertisement (Y) and the following results were obtained :

| | Sales (₹ in crores) | Advertisement (₹ in lakhs) |
|--------------------------|-------------------------------|--------------------------------------|
| Mean | 115 | 120 |
| Standard deviation | 10 | 15 |
| Correlation co-efficient | 0.75 | |

- Calculate the two regression equations.
- Find the likely sales when advertisement is ₹ 100 lakhs.
- Find the likely advertisement when sales is ₹ 150 crores.