(Following Paper ID and Roll No. to be filled in your Answer Book.

PAPER ID : 9104/ Roll
9304 No.

Int. LLB Examination 2014-2015

(First Semester)

QUANTITATIVE ANALYSIS AND BUSINESS MATHEMATICS

Time : 3 Hours]   *[Maximum Marks : 100*

Note :– i)   Attempt all section.

ii) Section A carries 20 marks, Section B
carries 30 marks and Section C carries
50 marks.

SECTION – A

1.   Fill in the blanks. All parts are compulsory : $10 \times 2 = 20$

(a)   The curve is normal if $\beta_2 = $ ....

(b)   The line of regression always pass through a
point ....

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(c) If mean > mode, then distribution is .... skewed.

(d) If $A \subseteq B$, then $A \cap B = $ ....

(e) If $\sigma = 2$, $\bar{x} = 5$, the equation of normal distribution is ....

(f) The probability of getting number 5 exactly two times in five throws of an unbiased die is ....

(g) $SD = \sqrt{\dfrac{\text{...............}}{\sum f} - \left(\dfrac{\sum fd}{\sum f}\right)^2}$

(h) Coefficient of skewness = ...

(i) The probability that a year selected at random contains 53 Sundays are ....

(j) Histogram consists of rectangular erected with bases equal to length of .... of frequency distribution.

(k) $A - (B \cap C) = $ ....

(l)   The fifth decile is equal to an average is
....

(m)   Unit matrix has its .... elements is
equal to one.

(n)   Graphical method of L. P. P. can be applied only
.... variables.

(o)   In H. P. the .... value are considered.

(p)   Union of sets have .... elements of
all the sets.

(q)   Partition value are ....

(r)   Kurtosis has .... type of shape of
curves.

(s)   Rank correlation is calculated in ....
data.

(t)   The infinite sum is calculated in ....
progression.

SECTION – B

Note :–   Answer any three questions out of five. 3×10

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2. Find all possible solutions for x and y in each of the following cases :

   (a) $\{2x, y\} = \{4, 6\}$

   (b) $\{x, 2y\} = \{1, 2\}$

   (c) $\{2x\} = \{0\}$

3. Calculate the mean and standard deviation for the following data :

Size of item	6	7	8	9	10	11	12
Frequency	3	6	9	13	8	5	4

4. Obtain the line of regression of y on x for the data given below :

x	1:53	1.78	2.60	2.95	3.42
y	33.50	36.30	40.00	45.80	53.50

5. Three machines I, II and III manufacture respectively 0.4, 0.5, 0.1 of the total production. The percentage of defective items produced by I, II and III is 2, 4 and 1 percent respectively. For all item choosen at random what is the probability it is defective?

6. Define 'Poisson Distribution'. Give some examples of the occurance of Poisson distribution in different fields.

SECTION – C

Note :– All questions are compulsory. $12\frac{1}{2}×4=50$

7. (a) Define :

     (i)   Mean

     (ii)   Median

     (iii) Mode

     (iv) Standard Deviation

OR

(b) Determine for what values of λ and μ the following equations have :

     (i)   No solution

     (ii)   A unique solution

     (iii) Infinite number of solutions

$$x + y + z = 6$$
$$x + 2y + 3z = 10$$
$$x + 2y + \lambda z = \mu$$

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8. (a) What do you mean by presentation of statistical data? Explain :

   (i) Bar diagram

   (ii) Histogram

   (iii) Frequency Polygon

   with a suitable example.

   OR

   (b) What do you mean by Matrices? Explain the various types of matrices with example.

9. (a) Prove that arithmetic mean of the coefficient of regression is greater than the coefficient of correlation.

   OR

   (b) If

$$A = \begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$$

   find A^{-1}.

10. (a) Determine the values of α, β, γ when :

$$\begin{bmatrix} 0 & 2\beta & \gamma \\ \alpha & \beta & -\gamma \\ \alpha & -\beta & \gamma \end{bmatrix}$$

is orthogonal.

OR

(b) Prove that the product of two matrices :

$$\begin{bmatrix} \cos^2\theta & \cos\theta\sin\theta \\ \cos\theta\sin\theta & \sin^2\theta \end{bmatrix} \text{ and } \begin{bmatrix} \cos^2\phi & \cos\phi\sin\phi \\ \cos\phi\sin\phi & \sin^2\phi \end{bmatrix}$$

is zero, when θ and φ differ by an odd multiply of $\frac{\pi}{2}$.

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