

Code No. 2005

**FACULTY OF MANAGEMENT**  
**MBA I – Semester Examination, January / February 2015**

**Subject: Statistics for Management**  
**Course No. 1.5**

Time: 3 Hours

Max. Marks: 80

Note: Answer all the questions.

**PART – A (10x2 = 20 Marks)**  
**[Short Answer Type]**

1. Answer the following in not exceeding 60 words each at one place.

- a) Skewness
- b) What is statistical independence?
- c) What are the properties of normal distribution?
- d) What are the properties of Poisson distribution?
- e) Quartiles
- f) State the components of time series
- g) What are the assumptions of chi-square distribution?
- h) What are the assumptions of ANOVA?
- i) Null and alternative hypothesis
- j) What are the managerial uses of regression analysis?

**PART – B (5x12 = 60 Marks)**  
**[Essay Answer Type]**

Answer all questions using internal choice.

- 2 a) An analysis of the monthly wages paid to workers in two firms A and B belonging to the same industry gives the following results:

|                                    | Firm A | Firm B |
|------------------------------------|--------|--------|
| No. of workers                     | 1600   | 1500   |
| Average wage (Rs.)                 | 2690   | 2750   |
| Variance of wage distribution (Rs) | 1000   | 1210   |

Find out

- i) Combined mean
- ii) In which firm there is consistency?

**OR**

- b) i) State and explain addition theorem of probability.
- ii) A committee of 4 people is to be appointed from 3 officers of the production department, 4 officers of purchase department, 2 officers of the sales department and 1 chartered accountant. Find the probability of forming the committee in the following manner.
  - i) There must be one from each category
  - ii) It should have at least one from the purchase department
  - iii) The chartered accountant must be in the committee.

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- 3 a) i) What are the properties of probability distribution function?  
 ii) Fit a Binomial distribution to the following data:

|   |    |    |    |    |   |
|---|----|----|----|----|---|
| X | 0  | 1  | 2  | 3  | 4 |
| F | 20 | 60 | 46 | 18 | 6 |

**OR**

- b) i) What are the business applications of normal distribution?  
 ii) As a result of tests on 25,000 electric lamps manufactured by a company, it was found that the life time of the lamps was normally distributed with an average life of 2500 hours and standard deviation of 100 hours. On the basis of the information, estimate the number of lamps that is expected to burn for (i) more than 2800 hours, and (ii) less than 1500 hours.

- 4 a) i) What is standard error? What are its uses?  
 ii) Random samples drawn from two places gave the following data relating to the heights of adult males:

|                                | Place A | Place B |
|--------------------------------|---------|---------|
| Mean height (in inches)        | 68.50   | 68.58   |
| Standard deviation (in inches) | 2.5     | 3.0     |
| No. of adult males in sample   | 1200    | 1500    |

Test at 5% level that the mean height is the same for adults in the two places.

**OR**

- b) i) What is stratified random sampling? What are its advantages?  
 ii) It is observed that in a lot of 500, 6% of the items of a factory are defective. After a little adjustment in the machinery it was found that 4% items in a lot of 700 are defective. Is it reasonable to assume that the items of the factory have improved after the adjustment in the machinery?
- 5 a) A certain medicine given to 9 patients resulted in the following increase of blood pressures:  
 8, 3, -1, 4, -3, 5, 8, 0, -4  
 Can it be concluded that the medicine will, in general, be accompanied by increase in blood pressure?

**OR**

- b) The following figures relate to production in kg of three varieties A, B, and C of wheat sown in 12 plots:
- |   |    |    |    |    |    |
|---|----|----|----|----|----|
| A | 14 | 16 | 18 |    |    |
| B | 14 | 13 | 15 | 22 |    |
| C | 18 | 16 | 19 | 19 | 20 |
- Is there any significant difference in the production of three varieties?

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- 6 a) i) What is correlation? What are its business applications?  
ii) From the following data find regression equation of Y on X. Also estimate the most likely value of Y corresponding to X = 175:

|   |    |    |    |    |    |    |    |     |
|---|----|----|----|----|----|----|----|-----|
| X | 75 | 82 | 85 | 88 | 90 | 92 | 95 | 100 |
| Y | 65 | 68 | 70 | 72 | 75 | 85 | 85 | 94  |

**OR**

- b) i) Explain the role of time series analysis in business decision making.  
ii) From the following data fit a trend line equation of  $y = a + bx$

|                   |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|
| Years             | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| Profits (Rs.'000) | 178  | 186  | 195  | 198  | 185  | 184  | 192  | 212  |

Also estimate the most likely profits in 2020.

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