RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.SC. FIRST SEMESTER EXAMINATION, DECEMBER 2013

FIRST YEAR

Date : 14/12/2013 **Economics (Honours)**

Time : 11am – 3pm Paper : I Full Marks : 100

(Use a separate answer book for each group)

Group – A

1. Answer **any three** questions from the following : (3 × 4)
   a) Discuss about the basic features of Indian economy on the eve of independence.
   b) Mention some of the reasons for lower productivity in Indian agricultural sector.
   c) What do you mean by institutionalisation of rural credit in India?
   d) Mention some of the basic features of the New Industrial Policy in India.
   e) Mention some problems of measuring unemployment in a country like India.
2. Answer **any one** question from the following : (1 × 8)
   a) Write a brief note on the emerging knowledge based sector in India in the recent period.
   b) Discuss about the trend and pattern of employment in the post reform period.
3. Answer **any two** questions from the following : (2 × 15)
   a) Discuss the basic features and impacts of Green Revolution in India. What can you think about the future of Green Revolution in India. (4 + 6 + 5)
   b) What were the basic objectives of introducing PDS in foodgrains in India? Critically evaluate the problem of food security in recent years. (5 + 10)
   c) Do you agree with the view that industrialisation in the plan period is a story of "growth and stagnation" simultaneously. Defend your answer. (15)
   d) Discuss about the extent and nature of poverty in India. Critically evaluate the poverty eradication programmes of the Government of India during plan period. (7 + 8)

Group – B

Unit - I

4. Answer **any two** questions of the following : (2 × 10)
   a) i) Give one example where it is appropriate to use harmonic mean. (2)
      ii) Derive the formula for the combined arithmetic mean of k group of observations. (3)
      iii) Show that the combined median of two groups lies between the two group medians. (5)
   b) i) Show that mean absolute deviation is least when measured about median. (5)
      ii) Given a set of observations x_1, ... x_n we generate a new set by the following rule : select any two observation x_i and x_j. Let $x_i < x_j$. Change x_i to $x_i + \varepsilon$ and x_j to $x_j - \varepsilon$ where $0 < \varepsilon < \frac{x_j - x_i}{2}$. What will be the relation between the standard deviations of the two sets of observations? (5)
   c) i) The arithmetic mean and variance of a set of 10 figures are known to be 17 and 33 respectively of the 10 figures one figure, i.e., 26 was subsequently found to be inaccurate and was weeded out. What is the resulting arithmetic mean and standard deviation? (5)
      ii) The sum and sum of squares corresponding to length (X) and weight (Y) of 50 out eaters are given below :

      $\sum X = 212, \sum X^2 = 902.8$

      $\sum Y = 261, \sum Y^2 = 1457.6$

      Which is more varying, the length or the weight? (5)

d) i) If $u = \frac{x - A}{h}$ where A and hare two aribitary constants and μ_r the rtn moment of x about mean, find the rth moment of u about its mean. (5)

ii) Show that for a symmetric distribution the third order central moment (i.e, about mean) is Zero. (5)

5. Write short notes on (**any one**) : (1 × 5)

i) Absolute and relative measures of dispersion.

ii) Kurtosis and its measure.

Unit - II

6. Answer **any two** questions of the following : (2 × 10)

a) i) State and prove Boole's inequality. (6)

ii) Prove that $P(A^c / B) = 1 - P(A / B)$. Hence show that $P(A / B) \geq 1 - \frac{P(A^c)}{P(B)}$. (4)

b) i) Define mutual independence of 'n' events and show that pairwise independence does not imply mutual independence. (5)

ii) 5 different letters are put inside 5 addressed envelopes by an illiterate servant. What is the probability that only 2 letters are put in correct envelopes? (5)

c) i) A consignment of 15 record players contain 4 defective items. The record players are selected at random one by one and examined. The one examined are not put back. What is the probability that the 9th one examined is the last defective. (5)

ii) Two persons throw a die alternately till one of them gets a multiple of 3, and wins the game. Find their respective probabilities of winning. (5)

d) i) Derive the mean and variance of a binomial distribution using moment generating function. (5)

ii) Show that, under certain conditions, the moment generating function of a binomial distribution converges to the moment generating function of a Poisson distribution. (5)

7. Answer **any one** question of the following : (1 × 5)

a) What can you say about the skewness of a Poisson distribution?

b) Give an example where you compute probability using Bayes theorem. Explain your computations.