GAY-424 Seat No. _____

B. Sc. (Sem. IV) Examination

March / April - 2017

ES-MAT-22 : Mathematics

(Business Mathematics - II)

(Subjective Elective)

Time : **2** Hours] [Total Marks : **50**

Instruction : Figures to the right indicate marks of the corresponding questions.

1 Attempt any five : **25**

(a) What is the probability of drawing a black card or a king from a well shuffled pack of playing cards ?

(b) A pair of unbalanced dice is thrown, find the probability that

(i) the sum of spots is either 5 or 10

(ii) either there is a doublet or a sum less than 6

(c) A bag contains 10 red and 8 black balls. Two balls are drawn at random. Find the probability that (i) both of them are red (ii) one is red and the other is black.

(d) A bag contains 6 red and 4 white balls. Another bag contain 3 red and 5 white balls. A fair die is tossed for the selection of bag. If the die shows 1 or 2. The first bag is selected otherwise the second bag is selected. A ball is drawn from the selected bag and is found the red. What is probability that the first bag was selected ?

(e) Two players A and B toss an unbiased die alternatively. He who first throws a six wins game. If A begins what is the probability that B wins the game.

(f) A man has 5 one rupee coins and one of them is known to have two heads. He takes out a coin at random and tosses it 5 times. It always falls head upward. What is the probability that it is a coin with two heads ?

(g) How many distinct words can be formed from the letter of the word MEERUT ? How many of these words start at M and end at T ?

2 Attempt any five : **25**

(a) The probability of a bomb hitting a target is 1/5. Two bombs are enough to destroy a bridge. If six bombs are aimed at the bridge find the probability that the bridge is destroyed.

(b) A company makes electric toys. The probability that an electric toy is defective is 0.01. What is the probability that a shipment of 300 toys will contain exactly 5 defective ?

(c) An executive makes on an average 5 telephone call per hour at a cost which may be taken as Rs. 2 per call. Determine the probability that in any hour the telephone call cost (i) exceed Rs. 6 (ii) remain less than Rs. 10.

(d) The following mistake per page were observed in a book

No. of mistake per page :	0	1	2	3
Frequency :	211	90	19	5

Fit a Poisson distribution to find the theoretical frequencies.

(e) If for a Poisson variable X, P (x=1) = P (x=2) find P (x=1 or 2). Also find its mean and standard deviation.

(f) A firm produces articles of which 0.1 per cent are usually defective. It packs them in cases each containing 500 articles. If a wholesaler purchases 100 such cases how many cases are expected to be free of defective items and how many are expected to contain one defective item ?

(g) In a town on an average 10 accidents occur in a span of 50 days. Assuming that the number of accidents per day follow Poisson distribution find the probability that there will be three or more accidents in a day.
