SUBJECT CODE: 15EC/AC/SE15

B.A. DEGREE EXAMINATION NOVEMBER 2015
BRANCH IV – ECONOMICS
FIRST SEMESTER

COURSE   : ALLIED - CORE
PAPER   : STATISTICS FOR ECONOMICS
TIME   : 3 HOURS   **MAX. MARKS: 100**

SECTION – A

ANSWER ANY TEN QUESTIONS. EACH ANSWER NOT TO EXCEED 50 WORDS
                                                              (10x2=20)

1. Define Correlation.

2. What are the 2 regression lines that can be framed?

3. Given $b_{xy} = 0.8$ and $b_{yx} = 1.2$. Find r.

4. State the addition theorem of probability.

5. A problem in Statistics is given to 5 students A, B, C, D, E. Their chances of solving it are: 1/2, 1/3, 1/4, 1/5 and 1/6 respectively. What is the probability that the problem will be solved?

6. What are random variables?

7. What are mutually exclusive events?

8. What are the constants of Poisson distribution?

9. What are type I and type II errors?

10. What are null and alternate hypothesis?

11. Define Time Series Data.

12. List the various methods to measure trend.

SECTION – B

ANSWER ANY FIVE QUESTIONS. EACH ANSWER NOT TO EXCEED 400 WORDS   **(5x8=40)**

13. Write short notes on the types of correlation and the methods to study correlation.

14. For the following data calculate Karl Pearson's Co efficient of Correlation.

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MARKS OBTAINED IN COMMERCE	MARKS OBTAINED IN ECONOMICS
50	48
60	65
58	50
47	48
49	55
33	58
65	63
43	48
46	50
68	70

15. The screws produced by a certain machine were checked by examining samples of 12. The following table shows the distribution of 128 samples according to the number of defective items that they contained. Fit a binomial distribution and find the expected frequencies if the chance of a machine being defective is ½.

No. of defectives in a sample of 12	No. of samples
0	7
1	6
2	19
3	35
4	30
5	23
6	7
7	1
Total	128

16. The following mistakes were observed per page in a book. Fit a Poisson distribution to this data:

No. of mistakes per page	No. of times mistake occurred
0	211
1	90
2	19
3	5
4	6

17. a. Write a short note on conditional probability.

     b. In a bolt factory, machines A, B and C manufacture 25%, 35% and 40% of the total output respectively. Of the total output 5%, 4% and 2% are defective bolts. A bolt is drawn at random and is found to be defective. What are the probabilities that it was manufactured by machines A or B or C?

18. 2 Types of drug were used on 5 and 7 patients for reducing their weight. Drug A was imported and Drug B was indigenous. The decrease in weight after using the drug for 6 months is given below. Is there a significant difference in the average weights of the patients at $\alpha = 1\%$?

Drug A	Drug B
10	8
12	9
13	12
11	14
	15
14	10
	9

19. What are the various steps in testing a hypothesis?

20. Calculate 3 yearly moving average for the following data and draw the trend.

Year	Production
2005	21
2006	22
2007	23
2008	25
2009	24
2010	22
2011	25
2012	26
2013	27
2014	26

SECTION – C
ANSWER ANY TWO QUESTIONS. EACH ANSWER NOT TO EXCEED 1000 WORDS
(2x20=40)

21. For the following data estimate the 2 regression lines and obtain the most likely mark in Statistics when the mark in Economics is 30:

Marks in Economics	Marks in Statistics
25	43
28	46
35	49
32	41
31	36
36	32
29	31
38	30
34	33
32	39

22. The following table gives the yield on 15 sample plots under 3 varieties of seeds- A,B,C. Test the hypothesis whether the average yield of land under different varieties show significant differences at $\alpha = 1\%$:

A	B	C
20	18	25
21	20	28
23	17	22
16	15	28
20	25	32

23. Test if the average spending (in Rs.) differs significantly with respect to respondents belonging to low income (LY), middle income (MY) and high income (HY) categories. $\alpha = 1\%$.

Spending of LY in Rs.:	55	75	60	80	90
Spending of MY in Rs. :	55	80	62	73	89
Spending of HY in Rs.:	50	65	80	100	120

24. What is time series analysis? What are the components of time series?

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