

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Com. Corp./ BBA DEGREE EXAMINATION

THIRD SEMESTER – NOVEMBER 2007

ST 3105/ST 3102 - INTRODUCTION TO STATISTICS

BB 24

Date : 02/11/2007
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

SECTION- A

Answer all the questions

(10x2=20)

1. Define "Statistics".
2. What do you understand by the term "Sampling error"?
3. State any two tests of skewness.
4. Explain any two limitations of statistics.
5. What is meant by simple random sampling? How would you select 20 households from a town with 400 households by simple random sampling?
6. In a frequency distribution the coefficient of skewness based on quartile is 0.6. If the sum of the upper and the lower quartiles is 100 and the median is 38, find the value of the upper quartile.
7. Calculate Range and coefficient of range from the following data:

Marks	20-30	30-40	40-50	50-60	60-70
No. of Students	8	10	12	8	4

8. When mean is 25 and mode is 24, find the value of median.
9. Examine whether A and B are independent in the following case:
 $N = 5,000$, $(A) = 2,350$, $(B) = 3,104$, $(AB) = 1,600$
10. From the ranks according to two attributes in a sample given below calculate rank correlation between them.

R1	1	2	3	4	5
R2	5	4	3	2	1

SECTION - B

Answer any five questions

(5x8=40)

11. What is time series? What are the components of time series?

12. The annual profits in lakhs of rupees of 100 companies are distributed as follows:

Profits per co (Rs.lakhs)	0-50	50-100	100-150	150-200	200-250	250-300
No. of co's	12	18	27	20	17	6

Draw a histogram and superimpose the frequency curve on it.

13. Calculate trend by four yearly moving average and find short-term oscillations for the following data:

Year	1990	1991	1992	1993	1994	1995	1996
Value	12	25	39	54	70	87	105

1997	1998	1999	2000	2001	2002	2003
100	82	65	49	34	20	7

14. Calculate mean, median and mode from the following data:

Marks more than	0	20	40	60	80	100	120
No. of students	80	76	50	28	18	9	3

15. Ten competitors in a voice contest are ranked by three judges as follows:

First Judge	1	6	5	10	3	2	4	9	7	8
Second Judge	3	5	8	4	7	10	2	1	6	9
Third Judge	6	4	9	8	1	2	3	10	5	7

Use the Spearman's rank correlation to gauge which pair of judges has the nearest approach to common likings in voice.

16. The following table gives the height of students in a class. Calculate the quartile deviation and coefficient of quartile deviation.

Height (inches)	50-53	53-56	56-59	59-62	62-65	65-68
No. of students	2	7	24	27	13	3

17. From the following data compute Harmonic Mean:

Marks	0-10	10-20	20-30	30-40	40-50
No. of candidates	5	20	40	70	85

50-60	60-70	70-80	80-90	90-100
65	50	35	20	10

18. The following table gives the number of literates and criminals in two cities. Compare the degree of association between literacy and criminality in these two cities separately:

	Jalandhar	Jammu
Total No. ('000)	244	184
Literates ('000)	40	47
Literate criminals ('000)	3	3
Illiterate criminals ('000)	40	20

SECTION - C

Answer any two questions

(2x20=40)

19. Find seasonal variations by the ratio-to-trend method from the data given below:

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2000	30	40	36	34
2001	34	52	50	44
2002	40	58	54	48
2003	54	76	68	62
2004	80	92	86	82

20. Calculate first four moments and also the value of β_1 and β_2 from the following data:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students	8	12	20	30	15	10	5

21. Compute the Karl Pearson's coefficient of correlation between dividends and price of securities as given below:

Security Price (Rs.)	Annual Dividends (in Rs.)					
	6-8	8-10	10-12	12-14	14-16	16-18
130-140	-	-	1	3	4	2
120-130	-	1	3	3	3	1
110-120	-	1	2	3	2	-
100-110	-	2	3	2	-	-
90-100	2	2	1	1	-	-
80-90	3	1	1	-	-	-
70-80	2	1	-	-	-	-

22. a) An analysis of monthly wages of workers of two organizations A and B yielded the following results:

Particulars	A	B
No. of Workers	50	60
Average monthly wages	Rs.60	Rs.48
Variance	100	144

Calculate: i) The average monthly wages and the standard deviation of wages of all workers in the two organization taken together

ii) Which organization is more consistent in regard to wages?

b) From the following data given below:

	X	Y
Arithmetic mean	36	85
Standard Deviation	11	8

Correlation coefficient between X and Y is 0.66

(i) Find the two regression equations and

(ii) Estimate the value of X when Y=75.
