

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted during the academic year 2004-05 & thereafter)

SUBJECT CODE: CA/AC/BS23

B. C. A. DEGREE EXAMINATION, APRIL 2007
SECOND SEMESTER

COURSE : ALLIED CORE
PAPER : BASIC STATISTICS
TIME : 3 HOURS

MAX. MARKS : 100

SECTION – A

ANSWER ALL THE QUESTIONS:

10 X 2 = 20

1. What is classification? State the different types of classification.
2. Find the AM of the following data:

x	5	10	15	20	25	30	35	40
y	5	9	13	21	20	15	8	3
3. What is the formula for combined standard deviation of two groups?
4. If $B_2 < 3$, the distribution is _____.
5. If a card is drawn from a pack of cards the probability of getting a king or a queen is _____.
6. Given the regression equations $8X - 10Y + 66 = 0$ & $40X - 18Y = 214$, find the average value of X and Y.
7. If the mean and variance of a binomial distribution are 4 and $\frac{8}{3}$ resp, find the parameters of the distribution.
8. The following data pertain to a test involving analysis of variance.
Estimate of population variance based on variance among the sample means = 18.5
Estimate of population variance based on variance within the samples = 12.5
The f-statistic is equal to _____.
9. A random variable X has the following probability distribution

X	1	3	5	7	9
p(X=x)	2K	2K+0.5	3K	3K+0.25	3K-0.05

 - (i) find the value of K
 - (ii) prob (X > 3).

10. From the following data, construct an index for 1998 taking 1990 as base by the method of weighted average of price Relatives.

Commodities	wt	price in 1990 (Rs)	price in 1998 (Rs)
A	2	12	24
B	8	8	12
C	4	15	27
D	5	6	18
E	1	10	12

SECTION – B

ANSWER ANY EIGHT QUESTIONS:

8 X 5 = 40

11. Represent the following by a Histogram

Weekly wages(Rs)	10-15	15-20	20-25	25-30	30-40	40-50	50-70
No of workers	7	19	27	15	12	12	8

12. Find the missing frequencies f_1, f_2 in the following distribution given that the mean of the distribution is 1.46 and the total no. of observation is 200.

X	0	1	2	3	4	5
f	46	f_1	f_2	25	10	5

13. Calculate the geometric mean of the following
2574, 475, 5, 0.8, .005, .0009

14. Calculate the standard deviation of the following data.

Marks	0-20	20-40	40-60	60-80	80-100
No. of students	8	12	30	20	10

15. Calculate spearman's coefficient of rank correlation for the following data.

X	53	98	95	81	75	61	59	55
Y	47	25	32	37	30	40	39	45

16. The following results were obtained from the marks scored in statistics

	Marks in statistics X	Marks in Mathematics Y
Mean	39.5	47.5
S.D.	10.8	17.8

Karl pearson's coefficient of correlations between x & y is -0.42. Find the 2 regression equations. Estimate the value of y for x = 50. Estimate the value for X when Y = 30.

17. State any five characteristics of a Normal Distribution
18. The mean height of 50 male students who showed above average participation in college athletics was 68.2 inches with G.S.D of 2.5 inches. While 50 male students who showed no interest in such participation had a mean height of 67.5 inches and S.D. of 2.8 inches. Test the hypothesis that male students who participated in college athletics are taller than other male students.
19. The theory predicts that the proportion of means in four groups A, B, C and D should be 11: 4: 3: 2. In an experiment it was observed that the no. of four groups A,B,C and D are 1070,430,330,170. Does the result of the experiment support theory at 5% level of significance.
20. Calculate price index number of the year 1996 with 1986 as base years from the following data using (i) Laspeyre's formula (ii) Paasche's formula

Commodity	1986		1996	
	Price (Rs)	Quantity	Price	Quantity
A	10	150	11	160
B	12	90	13	10
C	15	60	16	60
D	9	50	12	40

SECTION – C

ANSWER ANY FOUR THE QUESTIONS:

4 X 10 = 40

21. The following data gives the weekly wages of 100 workers in a factory.

Weekly wages (Rs)	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64
No.of workers	4	5	12	23	31	10	8	5	2

Draw the less than ogive and hence read the value of the median. Verify your answer by direct calculation.

22. Calculate mean, median, mode for the following data

Daily Earnings (Rs)	50-53	53-56	56-59	59-62	62-65	65-68	68-71	71-74	74-77
No.of persons	3	8	14	30	36	28	16	10	5

23. In a distribution exactly normal, 7% of the items are under 35 and 89% are under 63. What are the mean and S.D of the distribution?

24. For the following bivariate data obtain Karl Pearson's coefficient of correlation.

Marks in Statistics	Marks in Economics				Total
	5-15	15-25	25-35	35-45	
0-10	1	1	-	-	2
10-20	3	6	5	1	15
20-30	1	8	9	2	20
30-40	-	3	9	3	15
40-50	-	-	4	4	8
Total	5	18	27	10	60

25. To test the efficiency of a new drug a controlled experiment was conducted wherein 300 patients were administered the new drug and 200 patients were not given the drug. The patients were monitored and the results were obtained as follows.

	Cured	Condition Worsened	No. effect	Total
Given the drug	200	40	60	300
Not given	120	30	50	200
	320	70	110	500

Test whether the drug was effective.

26. With the help of the following data construct Fisher's ideal index. Also prove that factor reversal test and Time reversal test are satisfied by Fishers ideal index.

Commodity	1980		1990	
	Price	Value	Price	Value
A	5	50	6	72
B	7	84	10	80
C	10	80	12	96
D	4	20	5	30
E	8	56	8	64

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