

TB141390

Reg. No:

Name :

**B.Sc. DEGREE (C.B.C.S.S) EXAMINATION, NOVEMBER, 2014
FIRST SEMESTER-COMPLEMENTARY COURSE (STATISTICS) FOR
MATHEMATICS, PHYSICS AND COMPUTER APPLICATIONS
STA1BS-BASIC STATISTICS**

Time: 3 hours

Max: 80 marks

Use of Scientific calculators and Statistical tables are permitted.

Part A

(Short answer questions)

Answer *all* questions. Each question carries 1 mark.

1. What is systematic sampling?
2. What is primary data?
3. Name a two dimensional diagram.
4. Define geometric mean.
5. What do you mean by dispersion?
6. Define coefficient of variation.
7. Define (a) sample space (b) event.
8. Give classical definition of probability.
9. What is commodity reversal test?
10. What is cost of living index number?

(10x1 = 10 marks)

Part B

(Brief answer questions)

Answer any *eight* questions. Each question carries 2 marks.

11. Distinguish between Census and Sampling.
12. What are the basis of Classification?
13. Define (a) Decile (b) Percentile.

(P.T.O.)

14. Calculate the coefficient of variation of the observations 7,9,10,8,6,5.
15. Represent the following data by a Box – Plot 24,25,25,26,29,32,33,35,37,40
16. Find mean and variance of first n natural numbers.
17. If A and B are independent events show that A and \bar{B} are independent.
18. Four coins are tossed, find the probability that exactly two heads turn up.
19. Given $P(A) = \frac{1}{4}$, $P(B) = \frac{1}{2}$ and $P(B|A) = \frac{1}{3}$ find $P(A|B)$.
20. Define an Index number.
21. Fisher's index number is an Ideal index number. Justify.
22. Construct Cost of living Index number from the following data

Group	A	B	C	D
Index	100	150	125	200
Weight	6	4	2	3

(8x2 = 16 marks)

Part C

(Short essay questions)

Answer any six questions. Each question carries 4 marks.

23. Explain the method of locating Median from an Ogive.
24. What are the desirable properties of a good average?
25. The mean age of 150 patients in a hospital is 60 years. If the mean of male patients is 70 and that of female patients is 55 years, find the number of male patients in the hospital.
26. Show that the sum of deviations of the observations from their A.M is zero.
27. Calculate the Mean deviation about median of the data

Class :	0 – 9	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59
Frequency :	3	10	15	18	8	6

28. State and prove addition theorem of probability.
29. If $P(A) = 0.5$, $P(B) = 0.6$ and $P(A \cap B) = 0.4$ find the probabilities of

- | | |
|----------------------------------|------------------------------|
| (i) at least one of A or B occur | (ii) A occurs but not B |
| (iii) B occurs but not A | (iv) neither A nor B occurs. |

30. Explain the various steps involved in the construction of an index number.

31. The following are the prices of 5 commodities in common use in 1975 and 1980. Calculate simple A.M. and simple G.M. index numbers of the price levels of these commodities for 1980 with 1975 as base.

Commodity	1	2	3	4	5
Price in 1975	20	25	16	5	18
Price in 1980	30	25	23	12	30

(6x4 = 24marks)

Part D

(Essay questions)

Answer any *two* questions. Each question carries 15 marks.

32. (a) Distinguish between absolute and relative measures of dispersion.

(b) The prices of two shares X and Y are given below:

X : 55 54 52 53 56 58 52 50 51 49

Y : 108 107 105 105 106 107 104 103 104 101

Which is more stable? Justify your answer

33. Calculate Median and Mode from the following data and by using the empirical relation find Mean.

Daily wage	<100	100 – 200	200 – 300	300 – 400	> 400
No. of Wage earners	14	62	99	18	7

34. (a) State and prove Baye's theorem.

(b) There are 2 urns. First urn contains 5 white and 7 red balls. The second urn contains 6 white and 5 red balls. One ball is drawn from the first urn at random and transferred to the second urn. Then a ball is drawn from the second urn

(P.T.O.)

and it is found to be white. What is the probability that the transferred ball was red?

35. (a) Discuss the uses of Index numbers.

(b) Find Laspeyre's and Paasche's Index numbers from the following data and hence find Fishers Index number.

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

(2x15 = 30 marks)