



QP CODE: 21100700



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Reg No : .....

Name : .....

**BCA DEGREE (CBCS) EXAMINATION, MARCH 2021**

**Third Semester**

Bachelor of Computer Application

**Complementary Course - ST3CMT32 - ADVANCED STATISTICAL METHODS**

2017 Admission Onwards

A659C9A8

Time: 3 Hours

Max. Marks : 80

**Part A**

*Answer any **ten** questions.*

*Each question carries 2 marks.*

1. Write down the pdf of uniform distribution in (2,8)
2. What is the total area under a standard normal curve?
3. What are the conditions under which Binomial distribution tends to Normal distribution?
4. Define standard error.
5. How t tables are prepared?
6. What is the relation between Normal and a t variable?
7. Point out the estimate of population mean & variance when sampling from Normal population.
8. What is the moment estimator of population mean when sampling from Normal population?
9. What is the 90% C .I. for population mean in sampling from normal population.
10. Define large sample test.
11. Give an example of a non parametric test.
12. Write down the chi-square statistic for a 2x2 contingency table.

(10×2=20)

**Part B**

*Answer any **six** questions.*

*Each question carries 5 marks.*

13. Obtain the mean and variance of Bernoulli distribution.





14. In a Binomial distribution consisting of 5 independent trials, first and second terms are 0.4096 and 0.2048 respectively. Find the parameter  $p$ .
15. A telephone exchange receives on an average 4 calls per minute. Find the probability that there will be 2 or less calls per minute.
16. Explain sampling distributions.
17. What are the properties of chi-square distribution?
18. Suggest any three unbiased estimator for population mean in Poisson population.
19. In a sample of 20 persons from a town 4 are suffering from TB. Find a 95 % confidence interval for the proportion of TB patients in the town.
20. How will you go on for a hypothesis testing?
21. A stenographer claims that she can take dictation at the rate of more than 120 words per minute. Of the 12 tests given to her she could perform an average of 135 words with a SD of 40. Is her claim valid at 5% level.

(6×5=30)

### Part C

*Answer any two questions.*

*Each question carries 15 marks.*

22. Define Normal distribution. The distribution of marks obtained by a group of students is normal with mean of 50 and SD 15. Estimate the proportion of students with marks (i) below 35(ii) between 45 and 55.
23. Define F statistic. What is its pdf. Explain two important uses of it in statistical analysis.
24. Obtain confidence interval for mean of a normal population when population SD is known.
25. A sample analysis of an examination result of 200 students were made. It was found that 46 students had failed, 68 secured III class, 62 second class and the rest were placed in the first division. Are these figures commensurate with the general examination results which is in the ratio 2:3:3:2 for various categories respectively.

(2×15=30)

