

19U344S

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Name:

Reg. No.

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER, 2020

(CUCBCSS – UG)

CC15U PSY3 C02 - PSYCHOLOGICAL STATISTICS

(Psychology – Complementary Course)

(2015 to 2018 Admissions – Supplementary/Improvement)

Time: Three Hours

Maximum: 80 marks

Part A

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

Objective type questions:

1. The variance of a binomial distribution with $n = 16$ and $p = 0.5$ is
(a) 3 (b) 4 (c) 1 (d) None of these.
2. The standard deviation of a Poisson distribution with mean 4 is
(a) 4 (b) 2 (c) 0.75 (d) 0.4
3. The theory of testing of hypothesis was initiated by
(a) R. A. Fisher (b) A. Wald
(c) C.R. Rao (d) Neyman and Pearson
4. Accepting the null hypothesis H_0 when it is false is called :
(a) Type I error (b) Type II error (c) Significance level (d) Power
5. The test for equality of variances of two normal populations is based on
(a) Normal distribution (b) t – distribution
(c) Chi square distribution (d) F – distribution.

Fill in the blanks:

6. The mean of a binomial distribution with parameters 'n' and 'p' is
7. For the Poisson distribution, the variance and third central moments are
8. Probability of rejecting the null hypothesis when the alternative hypothesis is true is called
9. The standard deviation of the sampling distribution of a statistic is known as
10. When σ is known, the hypothesis about population mean is tested by

(10 x 1= 10 Marks)

Part B

Answer *all* questions. Each one carries 2 marks

11. Can a binomial distribution have mean 4 and variance 6?
12. Define Poisson distribution.
13. Explain the terms population and sample.
14. Define normal distribution.
15. Define simple random sampling.

16. State the Central Limit Theorem.
17. What is a statistical test?
18. Define Critical region.
19. What are simple and composite hypotheses?
20. Write down the test statistic used for testing the equality of means of two normal populations with known standard deviations.

(10 x 2 = 20 Marks)

Part C (Paragraph Questions)

Answer any **six** questions. Each question carries 5 marks.

21. Determine the binomial distribution for which mean is 4 and variance 3.
22. Explain Non-Probability sampling methods.
23. Write down the probability density function of a normal variate X with mean 10 and standard deviation 4. Also find $P(8 < X < 12)$.
24. Explain the importance of Normal distribution.
25. Explain Stratified sampling.
26. What is meant by paired t- test?
27. Discuss a large sample test for the significance of the difference between two proportions.

(6 x 5 = 30 Marks)

Part D (Essay type questions)

Answer any **two** questions. Each question carries 10 marks.

28. The following table shows the number of customers returning the products in a marketing territory.

No. of returns	:	0	1	2	3	4	5	6
No. of stores	:	4	14	23	23	18	9	9

Fit a Poisson distribution.

29. What are the important properties of Normal distribution?
30. (a) Give the test statistic and critical region for testing the mean of a normal population with unknown variance using small samples.
 (b) A sample of size 8 from a normal distribution gave the following observations: 6, 8, 11, 5, 9, 11, 10, 12. Can the sample be regarded as drawn from a population with mean equal to 7 at 5% level of significance?
31. In a sample of 600 men from a certain city 400 are found to be smokers. In 900 from another city 450 are smokers. Do the data indicate that the cities are significantly different as far as smoking habits are concerned?

(2 x 10 = 20 Marks)
