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D3BPS2303 **Reg. No.....**

Name: .....

THIRD SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2024

(Regular/Improvement/Supplementary)

PSYCHOLOGY

GPSY3C06T: PROBABILITY DISTRIBUTIONS AND PARAMETRIC TESTS

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 marks)

1. Define power of a test.
2. What is meant by simple random sampling?
3. Define sampling frame.
4. State Central limit theorem.
5. What are the applications of Z test?
6. On the assumption that IQ's are normally distributed in the population with mean 100 and standard deviation of 5. Find the probability that a person selected at random would have IQ greater than 110.
7. Define a statistical hypothesis.
8. A sample of size 400 was drawn and the sample mean was found to be 99. Test whether this sample could have come from a normal population with mean 100 and Standard deviation 8 (use $\alpha = 5\%$).
9. Define judgment sampling.
10. What do you mean by a statistic?
11. Write a short note on test of significance of correlation coefficient.
12. Define Poisson distribution.

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 marks)

13. Write short notes on the following:
    a. Level of significance
    b. Degrees of freedom
    c. One tailed and two tailed tests

(PTO)

14. a) Explain Chi square test of population variance.

    b) A sample of 25 manufactured articles shows a variance of 100 in an important characteristic when manufacturing was done by a new method. In the old method, the S.D was 9. Do you think that the variability has increased?

15. Briefly explain Stratified sampling with the help of a suitable example. Describe its merits and demerits.

16. a) Define and elaborate two types of errors in testing of hypotheses.

    b) Define null and alternative hypothesis and give suitable examples.

17. Describe the procedure of testing the significance for difference between two proportions.

18. What are the advantages and disadvantages of sampling over complete enumeration?

19. A set of 5 similar coins is tossed 250 times with the following results:

Number of heads	0	1	2	3	4	5
Frequency	4	6	15	140	70	15

Fit a binomial distribution.

SECTION C: Answer any *one* question. The question carries *ten* marks.

20. a) What do you mean by Normal distribution? Discuss its properties.

    b) Discuss the importance of Normal distribution in Statistics.

    c) Give some examples of the occurrence of Poisson distribution in different fields.

21. a) Briefly explain the F test in testing of hypothesis.

    b) A political candidate wanted to know whether after hiring the public relation (PR) company for his image building was effective or not. In order to test this hypothesis, his popularity scores were recorded in 11 districts before and after the hiring of PR Company. Theses scores are shown below. On the basis of this information, can it be concluded that PR Company was effective in enhancing the popularity of the political candidate? Use Paired- t test to test your hypothesis at 1% level assuming that the differences of the scores are normally distributed.

Before	44	41	48	43	55	30	39	40	48	46	44
After	56	48	51	55	54	34	46	42	55	44	46

(1 × 10 = 10 Marks)