QP CODE: 24027831

24027831

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / IMPROVEMENT / REAPPEARANCE EXAMINATIONS, OCTOBER 2024

Third Semester

B.Sc Psychology Model I

COMPLEMENTARY COURSE - ST3CMT23 - PROBABILITY AND PROBABILITY DISTRIBUTIONS

2017 Admission Onwards

68BB7262

Time: 3 Hours Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. Define the term statistical regualarity.
2. What will be the addition theorem for two independent events?
3. Give any one use of multiplication theorem in probability theory.
4. Define statistical independence of events.
5. Give an example of a random variable.
6. Give an example for a discreate random variable.
7. Distribution function is always increasing, Why ?
8. Give the formula for variance in terms of expectations.
9. What is the mean and variance of standard normal distribution?
10. What is the advantages of standardisation in normal distribution?
11. If X~ N(0,1) then P(X>0) =
12. If X is distributed as standard normal then P(X>0) =

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. What are difference between axiomatic and classical definition of probability?

14. Two dice are tossed. Find the probability of getting an even number on the first die or a total of 8.

15. If A and B are independent events then Show that its compliments are also independent

16. A random variable X has the following probability mass function

X	-2	-1	0	1	2	3
$P(X)$	0.1	k	0.2	2k	0.3	k

Find the value of k and find its expectation.

17. Explain the expectation of random variable and state its properties.

18. A random variable X has the following probability mass function

X	0	1	2	3	4
$P(X)$	k	3k	4k	5k	k

i) Find the value of k ii) $P(X > 1)$

19. Explain binomial distribution and state its properties.

20. Hospital records show that of patients suffering from a certain disease, 75% die of it. What is the probability that of 6 randomly selected patients, 4 will recover?

21. If X~ B(5,0.5) draw the probability mass function of X.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. If P(A)=0.3, P(B)=.2, P(A∩B) =0.1 find the probabilities of i) atleast one of the event occure ii) exactly one of the event occur iii)none of the event occur.

23. If a random variable X possesses the following function.

X	3	2	1	0	-1	-2	-3
P(X)	0.1	0.2	3k	k	2k	0	0.1

i) Find the value of k ii) E(X) iii) V(X)

24. Explain the procedure standardisation with an example. What is its use in probability theory.

25. In a city, it is estimated that the maximum temperature in June is normally distributed with a mean of 23º and a standard deviation of 5°. Calculate the number of days in this month in which it is expected to reach a maximum of between 21° and 27°.

(2×15=30)