

QP CODE: 22100759



Reg No :

Name :

**B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS,
APRIL 2022**

Third Semester

B.Sc Psychology Model I

**COMPLEMENTARY COURSE - ST3CMT23 - PROBABILITY AND PROBABILITY
DISTRIBUTIONS**

2017 Admission Onwards

D1C07401

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. What do you mean by conditional probability
2. Give the addition theorem in probability theory
3. If $P(A)=0.4$, $P(B)=0.5$ and $P(A\cup B)=0.6$, Check wheather A and B are independent or not
4. If A and B are indendent events then $P(B|A) =$
5. Consider the random experiment of tossing a coin, let X denote the wheather it is head or tail, is it random variable? Why
6. Give an example for a continous random variable
7. If $E(X)=10$, then what will be $E(2X)$
8. If $V(X)=a$ then $V(kX) =$, where k is a constant
9. if Binomial distribution is symetric then value of "p" will be
10. If $X \sim N(0,1)$, the $P(X=0)$ is
11. If $X \sim N(10,4)$, explain the standardisation of X
12. If $X \sim N(0,1)$ then $P(X<1) =$

(10×2=20)

Part B

*Answer any **six** questions.*





Each question carries 5 marks.

13. Consider the random experiment of tossing 3 coins are tosses at a time, find probability of atleast two heads
14. If ϕ is the null set, then show that $P(\phi) = 0$
15. If A and B are independent events then Show that A and B^c are also independent
16. The pdf of discrete random variable is given by $f(x) = kx^2, x = 1, 2, 3$ find the value of k. also find its mean.
17. Consider an experiment of tossing 3 fair coins, X is the number of heads obtain its probability mass function
18. what is the relationship between mean and variannce of a discrete random variable, explain with an exapmle
19. Explain the binomial random experiment and binomial distribution
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. Write the properties of standard normal distribution. Draw its diagram also mention its application in probability theory

(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

22. If $P(A)=0.3, P(B)=.2, P(A \cap B) = 0.1$ 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. A random variable X has the following probability density function

X	0	1	2	3	4	5	6	7
$P(X)$	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2+k$

- i) Find k ii) $P(X \geq 6)$ iii) $P(0 < X < 5)$
24. If X is a normal variate with mean 20 and variance 25 then find the probability that 1) $16 < X < 22$ 2) $X \geq 23$ 3) $X < 10$
25. In a city, it is estimated that the maximum temperature in June is normally distributed with a mean of 23° 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)

