UNIT III
PROBABILITY AND RANDOM VARIABLES
PART A

1 . Define sample space.
2 . Define mutually exclusive events.
3 . Define probability of an event.
4 . State the axioms of probability.
5 . State addition law of probability.
6 . Define conditional probability.
7 . State multiplication rule of probability.
8 . Distinguish between conditional and unconditional probabilities.;
9 . State the theorem on total probability.
10. State Baye's theorem.
11. If A and B are mutually exclusive events with P(A) = 0.4 and P(B)= 0.5 , find P(A∪B).
12. Let A and B be independent events with P(A) = 0.5 and P(B) = 0.8 , find P(
13. If A and B are mutually exclusive events with P(A) = 0.29and P(B
$P(A \cap \overline{B})$.
14. If A and B are events with P(A) = 3/8 , P(B) = ½ and P(A∩B)= ¼
$P(A^c \cup B^c)$.
15. If A and B are events with P(A) = ¾ , P(B) = 5/8, prove that P(A∩
16. Prove that the probability of an impossible event is zero.
17. Prove that $P(\overline{A}) = 1 - P(A)$.
18. IF B ⊂ A , prove that P(B) ≤ P(A).
19. If A and B are independent events , prove that $\overline{A}$ and B are also in
20. If A and B are independent events , prove that A and $\overline{B}$ are also ind
21. If A and B are independent events , prove that $\overline{A}$ and $\overline{B}$ are also in
22. From 21 tickets marked with 20 to 40 numerals, one is drawn at ra
chance that it is a multiple of 5.
23. If you flip a balanced coin, what is the probability of getting at leas
24. A is known to hit the target in two out of 5 shots whereas B is kno
in 3 out of 4 shots. Find the probability of the target being hit when
25. Four persons are chosen at random from a group containing 3 men
children. Find the chance that exactly two of them will be children
26. The odds in favour of A solving a mathematical problem are 3 to 4
against B solving the problem are 5 to 7.Find the probability that th
by at least one of them.
27. A die is loaded in such a way that each odd number is twice as like
even number. Find P(G) ,where G is the event that a number greate
single roll of the die.
28. Tow dice are thrown together. Find the probability that total of the