1

(2006 - 5M, -2)

ASSIGNMENT-2

EE24BTECH11043 - Murra Rajesh Kumar Reddy

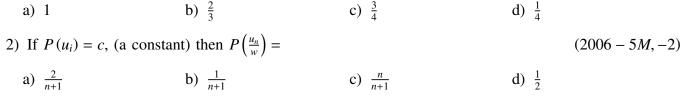
1)	\boldsymbol{A} i	is	target	ing	B,B	and	C	are	targ	eting	to	A.Pr	obab	ility	of	hitti	ing	the	targ	get 1	by	A, E	3 a	nd (C	are
	$\frac{2}{3}, \frac{1}{2}$	$\frac{1}{5}$ a	nd $\frac{1}{3}$	resp	pectiv	vely.	If	A is	hit	then	find	l the	prob	abili	ity	that	B h	its	the	targ	et	and	C	doe	s 1	ot.
	(20	03	-2N	1ark	(s)																					

- 2) A and B are two independent events. C is event in which exactly one of A or B occurs. Prove that $P(C) \ge P(A \cup B) P(\overline{A} \cap \overline{B})$ (2004 2Marks)
- 3) A box contains 12 red and 6 white balls. Balls are drawn from the box one at a time without replacement. If in 6 draws there are at least 4 white balls, find the probability that exactly one white drawn in the next two draws. (binomial coefficients can be left as such) (2004 4Marks)
- 4) A person goes to office either by car, scooter, bus or train the probability of which being $\frac{1}{7}$, $\frac{3}{7}$, $\frac{3}{7}$, $\frac{2}{7}$, and $\frac{1}{7}$ respectively. Probability that he reachs office late, ife takes car, scooter, bus or train is $\frac{2}{9}$, $\frac{1}{9}$, $\frac{4}{9}$ and $\frac{1}{9}$ respectively. Goven that he reached office in time, then what is the probability that he travelled by a car. (2005 2*Marks*)

G Comprehension Based Questions

PASSAGE-1

There are n urns, each of these contain n+1 balls. The i^{th} urn contains iwhite balls and (n+1-i) red balls. Let u_1 be the event of selecting i^{th} urn, i=1,2,3...,n and w the event of getting a white ball.



3) Let $P(u_i) = gn$, if n is even and E denotes the event of choosing even numbered urn, then the value of $P\left(\frac{w}{E}\right)$ is (2006 - 5M, -2)

a)
$$\frac{n+2}{2n+1}$$
 b) $\frac{n+2}{2(n+1)}$ c) $\frac{n}{n+1}$ d) $\frac{1}{n+1}$

PASSAGE-2

A fair die is tossed repeatedly until a six is obtained. Let *X* denote the number of tosses required. (2009)

4) The probability that X = 3 equals



a)
$$\frac{125}{216}$$
 b) $\frac{25}{216}$ c) $\frac{5}{36}$

6) The conditional probability that $X \ge 6$ given X > 3 equals

1) If $P(u_i) \propto i$, where i = 1, 2, 3, ..., n, then $\lim_{n \to \infty} P(w) =$

2)	125				
a)	216				

b)
$$\frac{25}{216}$$

c)
$$\frac{5}{36}$$

d)
$$\frac{25}{36}$$

PASSAGE-3

Let U_1 and U_2 be two urns such that U_1 contains 3 white and 2 red balls, and U_2 contains only 1 white ball. A fair coin is tossed. If head appears then 1 ball is drawn at random from U_1 and put into U_2 . However, if tail appears then 2 balls are drawn at random from U_1 and put into U_2 . Now 1 ball is drawn at random from U_2 . (2011)

7) The probability of the drawn ball from U_2 being white is

a)
$$\frac{13}{30}$$

b)
$$\frac{23}{30}$$

c)
$$\frac{19}{30}$$

d)
$$\frac{11}{30}$$

8) Given that the drawn ball from U_2 is white, the probability that head appeared on the coin is

a)
$$\frac{17}{23}$$

b)
$$\frac{11}{23}$$

c)
$$\frac{15}{23}$$

d)
$$\frac{12}{23}$$