	Exercis	;e-1 		
Mark	ed Questions may	have for Revision Ques	tions.	
		OBJECTI	VE QUESTIONS	8
Secti	on (A): Classic	cal definition of pro	bability	
A-1.	Two dies are rolled be atleast 10 is:	d simultaneously. The pro	obability that the sum of	f the two numbers on the top faces wil
	(1) 1/6	(2) 1/12	(3) 1/18	(4) none
A-2.	A number is chose chosen from the s	en at random among the et being a multiple of 5 o	set of first 120 natural r 15,is	numbers the probability of the number
	(1) $\frac{1}{5}$	(2) $\frac{1}{8}$	(3) $\frac{1}{24}$	(4) $\frac{1}{6}$
A-3.	In a horse race the horse will win the	e odds in favour of three race	horses are 1:2, 1:3 and	1:4. The probability that one of the
	<u>11</u>	47	<u>13</u>	
	(1) 30	(2) 60	(3) 30	(4) none
A-4.	7 men and 7 wom together is	en can be seated at a ro	und table find the proba	ability such that no two women can sit
	6!6!	6!7!	7!6!	7!6!
	(1) $13!$	(2) 12!	(3) 14!	$(4)^{-13!}$
A-5.	A couple has three is	e children. The probability	y of having 2 sons and	a daughter, if the eldest child is a son
	2	<u>1</u>	3	<u>1</u>
	(1) ³	(2) 3	(3) 4	(4) 2
A-6.	The chance that a game of bridge, in	13 card combination from which 9 cards are of the	m a pack of 52 playing same suit, is	cards is dealt to a specified player in a
	$\frac{4 \cdot {}^{13}C_9 \cdot {}^{39}C_4}{52 -}$	$\frac{4!.{}^{13}C_9.{}^{39}C_4}{52}$	$\frac{13}{C_9} \cdot \frac{39}{C_4}$	
	(1) ${}^{32}C_{13}$	(2) ³² C ₁₃	(3) ³² C ₁₃	(4) none of these
A-7.	15 coupons are no with replacement.	umbered 1, 2, 3,, 15 r The probability that the l	espectively. 7 coupons argest number appearin	are selected at random one at a time ng on a selected coupon is 9 is:
	$\left(\frac{9}{10}\right)^6$	$\left(\frac{8}{1-2}\right)^7$	$\left(\frac{3}{2}\right)^7$	$\frac{9^7 - 8^7}{7}$
	(1) ⁽¹⁶⁾	(2) (15)	(3) (5)	(4) 15 ⁷
A-8.	2n boys are rando tallest boys are in	omly divided into two sub different groups is	ogroups containing n be	oys each. The probability that the two
	$\frac{n}{2\pi}$	$\frac{n-1}{2}$	$\frac{2n-1}{1}$	
	(1) 2n – 1	(2) 2n – 1	(3) 4n²	(4) none of these
A-9.	If M & N are any t occurance of exact	wo events, then which o ty one of them ?	ne of the following doe	es not represents the probability of the
	$(1) P(N) + P(N) - (\overline{N})$	$2 \operatorname{P}(\operatorname{IVI} \cap \operatorname{IV})$	$(2) P(\mathbf{M}) + P(\mathbf{N})$	$- \mathbf{P} (\mathbf{M} \cap \mathbf{N})$
	(3) P ^(M) + P ^(N)	−2P ^(^{IVI} ∩ N)	(4) P ^(IVI ∩ IV) + I	$P^{(IVI \cap IN)}$

A-10.	Thirteen persons take t together are -	heir places at a round tab	ble, then the probability th	nat two particular persons sitting
	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{2}$
	(1) 6	(2) 3	(3) 2	(4) 7
A-11. If	12 tickets numbered 0, the sum of the numbers	1, 2,11 are placed s on them is equal to 12 i	in a bag, and three are o is -	drawn out, then the chance that
	$\frac{2}{2}$	$\frac{1}{2}$	$\frac{3}{52}$	3
	(1) 3	(2) 5	(3) 59	(4) 55
A-12.	In drawing of a card fro and 'card drawn is an a (1) mutually exclusive	m a well shuffled ordinar ice' are	y deck of playing cards t (2) equally likely	he events 'card drawn is spade'
	(3) forming an exhausti	ve system	(4) none of these	
A-13.	If A and B are any ever	nt of an experiment, then	Ac - B =	
	(1) (A ∩ B)c	(2) Ac – (A ∩ B)	(3) (A ∪ B)c	(4) A – B
A-14.	A die is thrown. Let A b turns up'. Write which c	e the event 'an odd numl of the following are true.	ber turns up' and B be th	e event 'a number divisible by 3
	(i) B ⊂ A	(ii) B – A ⊂ A	(iii) B – A ⊂ Ac	$(iv) A - B = A \cap Bc$
	(i) $B \subseteq A$	(ii) $B - A \subseteq A$	(iii) $B - A \subseteq A_c$	(iv) $A - B = A \cap B_c$
	(1) (1) and (1)	(2) (1), (11)		(4) (III) and (IV)
A-15.	An experiment results respectively. Which one [Assume $S_1 S_2 S_3 S_4$ and (1) $p_1 = 0.25$, $p_2 = 0.35$ (3) $p_1 = 0.30$, $p_2 = 0.60$	in four possible out co e of the following probabi re pair wise exclusive] $p_3 = 0.10, p_4 = 0.05$ $p_3 = 0.10, p_4 = 0.10$	lity assignment is possbi (2) $p_1 = 0.40$, $p_2 = -0.2$ (4) $p_1 = 0.20$, $p_2 = 0.30$	ith probabilities p_1 , p_2 , p_3 & p_4 ile. 20, $p_3 = 0.60$, $p_4 = 0.20$ $p_4 = 0.40$, $p_4 = 0.10$
A-16.	There are two children	in a family. The probabili	ty that both of them are l	ooys is
	<u>1</u>	1	<u>1</u>	
	(1) 2	(2) 3	(3) 4	(4) None of these
		$\frac{3}{4}$	$\frac{1}{4} P(\bar{A}) = \frac{2}{3},$	$P(\overline{A} \cap B)$
A-17.	If A and B are events s	uch that $P(A \cup B) = 4$, P	$(A \cap B) = 4, \qquad 5$	then '(',''''''''''''''''''''''''''''''''''
	$\frac{5}{12}$	$\frac{3}{8}$	$\frac{5}{8}$	$(4) \frac{\circ}{15}$
Contin	() ' ²	(2)	(3)	(4)
Section	Dri (B) : Addition th	eorem		
B-1.	Out of 13 applicants for The probability that at le (1) 25/39	a job, there are 5 wome east one of the selected	n and 8 men. It is desired persons will be a womar (3) 5/13	d to select 2 persons for the job. is (4) 10/13
В-2.	A, 5 to 2 against B. The (1) 34 : 43	A, B, C, one of which mu e odds against C are (2) 43 : 34	st, and only one can, hap (3) 53 : 45	(4) 43:53
	(1+3n)(1-n)(1-1)	2 n)		
B-3.	If $\frac{(1-2)}{3}$, $\frac{(1-2)}{4}$ & $\frac{(1-2)}{2}$ values of p is.	² are the probabilities	s of three pair wise excl	usive events then the set of all

	$(1)\left[\frac{1}{2},\frac{2}{3}\right]$	(2) $\left[\frac{1}{3}, \frac{1}{3}\right]$	$\left[\frac{1}{2}\right]$	(3) $\left[\frac{1}{4},\right]$	$\left[\frac{1}{2}\right]$	(4) $\left[\frac{1}{3},\right]$	$\left[\frac{2}{3}\right]$	
B-4.	If 3 events A, B, C a	re exhaustiv	e, then value	e of P(A) + F	P(B) + P(C) o	an be		
	$(1)^{\frac{4}{3}}$	(2) $\frac{3}{4}$		$(3) \frac{1}{3}$		$(4) \frac{3}{5}$		
Secti	on (C) : Condition	nal proba	bility, dep	endent ar	nd indepe	ndent eve	ents	
C-1.	In throwing a pair of (1) mutually exclusiv (3) independent	dice, the ev ve	ents 'coming	y up of 6 on 1 (2) form (4) depe	lst die' and 'a ning an exha endent	a total of 7 o ustive syste	n both the di m	es' are
C-2.	A fair die is tossed. I	If the numbe	r is odd, find	l the probabi	lity that it is	prime is		
	$(1)^{\frac{2}{3}}$	(2) ¹ / ₂		(3) 1		(4) $\frac{1}{3}$		
C-3.	A card is drawn fron spade. Then the pro	n a well shuf bability that	fled ordinary the card is a	/ deck of 52- in ace, is	-playing care	ds. The card	drawn is fou	und to be a
	$(1) \frac{1}{13}$	(2) $\frac{1}{52}$		$(3) \frac{1}{4}$		$(1) \frac{1}{8}$		
C-4.	A pair of dice is thro	(≃) own lf total o	of numbers t	urned up on	both the die	es is 8 then	the probabil	ity that the
•	number turned up or	n the second	l die is 5' is			-		
	$\frac{5}{36}$	$(2) \frac{1}{6}$		$(3)\frac{1}{5}$		$(4) \frac{2}{5}$		
C-5.	A bag contains 2 wh	nite & 4 blac	k balls. A ba	all is drawn	5 times, eac	h being repl	laced before	another is
	drawn. The probabil (1) 4/81	ity that atlea (2) 10/2	st 4 of the ba 43	alls drawn ai (3) 11/2	re white is: 243	(4) 8/24	43	
C-6.	A & B having equals	skill, are play	/ing a game	of best of 5	points. After	A has won t	two points &	B has won
	one point, the proba (1) 1/2	bility that A v (2) 2/3	will win the g	ame is: (3) 3/4		(4) 1/4		
C-7.	If odds against solving then probability that	ng a questio the questior	n independe n is solved of	ently by three nly by one st	e students ar tudent is	e 2:1,5:2	2 and 5 : 3 re	spectively,
	<u>31</u>	$\frac{24}{56}$		<u>25</u>		<u>29</u> 56		
C-8	(1) 50 A die is weighted so	(2) ³⁰	bability of di	(3) 50 fferent faces	to turn un is	(4) 50		
0-0.	Number			2		5 23 given	6	
	Probability	0.2	0.1	0.1	0.3	0.1	0.2	
	If $P(A/B) = p_1$ and $P(A/B) = p_2$	(B/C) = p ₂ ar	id P(C/A) =	o₃ then the v	alues of p ₁ , p	D2, p3 respec	tively are -	
	Take the events A, E	3 & C as A = 1	= {1, 2, 3}, B	= {2, 3, 5} ar	nd C = $\{2, 4, 1, 1\}$	6}	1 1	
	(1) $\frac{2}{3}$, $\frac{1}{3}$, $\frac{1}{4}$	(2) $\frac{1}{3}$,	$\frac{1}{3}, \frac{1}{6}$	(3) $\frac{1}{4}$, $\frac{1}{3}$	$\frac{1}{3}, \frac{1}{6}$	(4) $\frac{2}{3}$	$\frac{1}{6}, \frac{1}{4}$	
				1	2			
C-9.	If A and B are indep (1) 1	endent even (2) 2	ts and P(A r	n B) = ⁶ , P((3) 3	(A) = 3, the	en 6P(B/A) (4) 4	=	

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<u>Probability</u>

C-10.	If P(A) = 0.3, P(A ∪ B) = (1) 0.1	= 0.6 and P(A / B) = 0.25 (2) 0.2	5 , P(A – B) = (3) 0.3	(4) 0.4
C-11	Let A, B , C be three ev P(A) = 0.3, P(B) = 0.4, P P (A \cap B C') = 0.1. Find	rents such that : P(C) = 0.5, P(A \cap B') = 0 I the value of P(B' C')	.2, P(B ∩ C)=0.3, P(A' ∩	$B' \cap C'$) = 0.3 and
	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$
0 40 10	(1) 5	(2) 5	(3) ⁵	(4) 5
C-12. II	(1) 1/3	and $P(A \cap B) = 0.16$, the (2) 2/3	(3) 1/4	s (4) 1/6
C-13.	Let $0 < P(A) < 1$, $0 < P(A)$ (1) $P(B/A) = P(B) - P(A)$ (3) $P((A \cup B)_{C}) = P(A_{C})$.	B) < 1 & P(A ∪ B) = P(A)) P(Bc)	$P(B) - P(A) \cdot P(B)$, the (2) $P(A_c \cup B_c) = P(A_c) \cdot P(A/B) = P(A) - P(B)$	en: + P(Bc))
C-14.	If M & N are independe	nt events such that 0 < F	P(M) < 1 & 0 < P(N) < 1,	then choose the incorrect option
	(1) M & N are mutually	exclusive	(2) M & \overline{N} are indepen	dent
	(3) \overline{M} & \overline{N} are independent	dent	(4) $P(M/N) + P(\overline{M}/N)$	= 1
Sectio	on (D) : Total proba	bility theorem, Bay	e's theorem	
D-1.	2/3 rd of the students in a class is 0.25 & that of a is : (1) 0.26	a class are boys & the re boy is 0.28. The probab (2) 0.265	est girls. It is known that ility that a student chose (3) 0.27	probability of a girl getting a first en at random will get a first class (4) 0.275
D-2.	In a Aeroplane there are one Aeroplane is select is pilot is 2	e 2 pilots and 3 doctors a ted at random and a pers 7	and in another Aeroplane son is selected . Then th 8	e there are 4 pilots and 2 doctors ne probability the chosen person 14
	(1) 15	(2) 15	(3) 15	(4) 15
D-3.	A basket contains 5 app fruits is picked out form $\frac{24}{144}$	bles and 7 oranges and a each basket . Find the p $\frac{56}{144}$	another basket contains probability that both fruits (3) $\frac{68}{144}$	4 apples and 8 oranges. one are apples or both are oranges $(4) \frac{76}{144}$
D-4.	Consider two sets P = { $\frac{2}{3}$	a,b,c,d,e and $Q = \{f, g, g\}$	h, i, j} A person selects a	a set P with probability $\frac{1}{3}$ or set
	probability that set R co	in forms a subset K of two sists of one vowel & or	ie consonants	a from set P of Q . Fina
	1	3	2	7
	(1) 5	(2) 11	(3) 15	(4) 15

D-5. There are 4 urns. The first urn contains 1 white & 1 black ball, the second urn contains 2 white & 3 black balls, the third urn contains 3 white & 5 black balls & the fourth urn contains 4 white & 7 black $i^2 + 1$ 34 balls. The selection of each urn is not equally likely. The probability of selecting it urn is (i = 1, 2, 3, 4). If we randomly select one of the urns & draw a ball, then the probability of ball being white is : 569 27 729 $_{(3)}\frac{3}{73}$ (2) 56 (4) 1496 (1) 1496 Two cards are drawn successively from a well-shuffled ordinary deck of 52-playing cards without D-6. replacement and is noted that the second card is a king. The probability of the event 'first card is also a 'king' is 2 3 4 1 (3) 49 19 (2) 17 5 (1) (4) A bag contains (n + 1) coins. It is known that one of these coins has a head on both sides, whereas the D-7. other coins are normal. One of these coins is selected at random & tossed. If the probability that the toss results in head, is 7/12, then the value of n is. (1) 5 (2) 6 (3) 4(4) 3D-8. The contents of urn I and II are as follows, Urn I: 4 white and 5 black balls Urn II: 3 white and 6 black balls One urn is chosen at random and a ball is drawn and its colour is noted and replaced back to the urn. Again a ball is drawn from the same urn, colour is noted and replaced. The process is repeated 4 times and as a result one ball of white colour and 3 of black colour are noted. Find the probability the chosen urn was I. 125 64 25 79 (3) 287 (1) 287 (4) 192 (2) 127 D-9. A box contains 4 white and 3 black balls. Two balls are drawn successively and is found that second ball is white, then the probability that Ist ball is also white is 5 1 (3) 5 (4) 3 (1) 16 (2) 2 Section (E) : Probability distribution and binomial probability distribution Mean and variance of a Binomial variate are in the ratio of 3 : 2. The most probable number of happening E-1. of the variable in 10 trials of the experiment is (1) 2(2)3(3) 4(4)5E-2. A die is tossed thrice. A success is getting 1 or 6 on a toss. The mean and the variance of number of successes (2) $\mu = 2/3$, $\sigma_2 = 1$ (3) $\mu = 2$, $\sigma_2 = 2/3$ (1) $\mu = 1$, $\sigma_2 = 2/3$ (4) None of these E-3. In a series of 3 independent trials the probability of exactly 2 success is 12 times as large as the probability of 3 successes. The probability of a success in each trial is: (4) 4/5(1) 1/5(2) 2/5(3) 3/5E-4. If on an average 1 vessel in every 10 is wrecked, then the chance that out of 5 vessels expected 4 at least will arrive safely is

	(1) 45981 50000	(2) 1 (2) 10	(3) 45927 50000	(4) 1
E-5.	A fair coin is tossed 99	times. If X is the number	of times heads occur, th	en P (X = r) is maximum when r
	(1) 49	(2) 50	(3) 51	(4) 49 or 50
E-6.	An unbiased coin is $P(X = 4)$, $P(X = 5)$ and (1) 9	s tossed n times. Let P(X = 6) are in AP, then (2) 10	X denote the numb the value of n can be (3) 12	er of times head occurs. If (4) 14
E-7.	India decides to destru- bomb hitting the targe number of bombes req (1) 9	by one of the militants ho t, only two direct bomb h juired to give 99% chance (2) 10	Idings. In the bombing a hits are required to destr or better of completely (3) 11	attack there is 50% chance of a oy the target completely. Least destroying the target is (4) 12
E-8.	A pair of dice is thrown (1) $\frac{25}{377}$	65 times, then the probab $(2) \overline{3888}$	ility of getting a doublet of <u>625</u> (3) 1944	exactly two times is - $\frac{25}{(4)}$
	Exercise	-2		
Marke	d Questions may have	of or Revision Question	S.	
		PART - I : OBJEC	TIVE QUESTION	S
1	A 9 digit number using	n the digits 1 2 3 4 5	6 7 8 & 9 is written ra	ndomly without repetetion. The
	probability that the nur	nber will be divisible by 9	is:	ndonny without repetetion. The
	probability that the nur (1) 1/9	nber will be divisible by 9 (2) 1/2	is: (3) 1	(4) 9!/9 ₉
2.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball	 a succession from a box c b succession from a box c c succession from a box c c succession from a box c 	is: (3) 1 ontaining 4 red, 3 white a hite' is	(4) $9!/9_9$ and 5 blue balls. The probability
2.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11	 a succession from a box c b succession from a box c c sred and other ball is with (2) 3/11 	is: (3) 1 ontaining 4 red, 3 white a hite' is (3) 5/11	 (4) 9!/99 and 5 blue balls. The probability (4) 2/11
2.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11 A bag contains 6 white event 'balls drawn are	 a succession from a box c b succession from a box c c succession from a box c c red and other ball is wh (2) 3/11 c, 7 red and 5 blue balls. c, one of each colour' is 	is: (3) 1 ontaining 4 red, 3 white a hite' is (3) 5/11 Three balls are drawn a	 (4) 9!/99 and 5 blue balls. The probability (4) 2/11 t random. The probability of the
2.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11 A bag contains 6 white event 'balls drawn are $\frac{37}{100}$	nber will be divisible by 9 (2) $1/2$ succession from a box c is red and other ball is wi (2) $3/11$ e, 7 red and 5 blue balls. e, one of each colour' is $\frac{35}{22}$	(3) 1 ontaining 4 red, 3 white a hite' is (3) 5/11 Three balls are drawn a $\frac{35}{122}$	(4) 9!/9 ₉ and 5 blue balls. The probability (4) 2/11 t random. The probability of the $\frac{2}{3}$
2. 3.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11 A bag contains 6 white event 'balls drawn are $\frac{37}{136}$	nber will be divisible by 9 (2) 1/2 succession from a box c is red and other ball is will (2) 3/11 e, 7 red and 5 blue balls. e, one of each colour' is $\frac{35}{36}$ (2) $\frac{35}{36}$	(3) 1 ontaining 4 red, 3 white a hite' is (3) 5/11 Three balls are drawn a $\frac{35}{136}$	(4) 9!/9 ₉ and 5 blue balls. The probability (4) 2/11 t random. The probability of the $\frac{2}{3}$
2. 3. 4.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11 A bag contains 6 white event 'balls drawn are $\frac{37}{(1)}$ A coin whose faces ar numbers thrown being	nber will be divisible by 9 (2) 1/2 succession from a box c is red and other ball is will (2) 3/11 e, 7 red and 5 blue balls. e, one of each colour' is $\frac{35}{36}$ re marked 3 and 5 is tose less, than 15 ?	is: (3) 1 ontaining 4 red, 3 white a hite' is (3) 5/11 Three balls are drawn a $\frac{35}{(3)} \frac{35}{136}$ sed 4 times : what is the	(4) 9!/9 ₉ and 5 blue balls. The probability (4) 2/11 t random. The probability of the $\frac{2}{3}$ e probability that the sum of the
2. 3. 4.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11 A bag contains 6 white event 'balls drawn are $\frac{37}{(1)}$ $\frac{37}{136}$ A coin whose faces ar numbers thrown being $\frac{5}{(1)}$ $\frac{5}{16}$	nber will be divisible by 9 (2) 1/2 succession from a box c is red and other ball is will (2) 3/11 e, 7 red and 5 blue balls. e, one of each colour' is $\frac{35}{36}$ re marked 3 and 5 is toss less, than 15 ? (2) $\frac{1}{2}$	(3) 1 ontaining 4 red, 3 white a nite' is (3) 5/11 Three balls are drawn a (3) $\frac{35}{136}$ (3) $\frac{1}{5}$	(4) 9!/99 and 5 blue balls. The probability (4) 2/11 t random. The probability of the (4) $\frac{2}{3}$ e probability that the sum of the (4) $\frac{1}{3}$
2. 3. 4.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11 A bag contains 6 white event 'balls drawn are $\frac{37}{(1)}$ $\frac{37}{136}$ A coin whose faces are numbers thrown being $\frac{5}{(1)}$ $\frac{5}{16}$ A bag contains 7 ticke	nber will be divisible by 9 (2) 1/2 succession from a box c is red and other ball is will (2) 3/11 e, 7 red and 5 blue balls. e, one of each colour' is $\frac{35}{(2)}$ re marked 3 and 5 is tost less, than 15 ? (2) $\frac{1}{2}$	(3) 1 ontaining 4 red, 3 white a nite' is (3) 5/11 Three balls are drawn a (3) $\frac{35}{136}$ (3) $\frac{1}{5}$ oners 0, 1, 2, 3, 4, 5, 6 references	(4) 9!/9 ₉ and 5 blue balls. The probability (4) 2/11 t random. The probability of the (4) $\frac{2}{3}$ e probability that the sum of the (4) $\frac{1}{3}$
2. 3. 4. 5.	probability that the num (1) 1/9 Two balls are drawn in of the event 'one ball (1) 1/11 A bag contains 6 white event 'balls drawn are $\frac{37}{(1)}$ $\frac{37}{136}$ A coin whose faces are numbers thrown being $\frac{5}{(1)}$ $\frac{5}{16}$ A bag contains 7 ticker replaced. Then the char (1) 165/2401	re marked with the numl ance that after 4 drawings (2) 149/2401	(3) 1 ontaining 4 red, 3 white a hite' is (3) 5/11 Three balls are drawn a $\frac{35}{136}$ (3) $\frac{35}{136}$ (3) $\frac{1}{5}$ oers 0, 1, 2, 3, 4, 5, 6 ref the sum of the numbers (3) 3/49	(4) 9!/9 ⁹ and 5 blue balls. The probability (4) 2/11 t random. The probability of the (4) $\frac{2}{3}$ e probability that the sum of the (4) $\frac{1}{3}$ espectively. A ticket is drawn & c drawn is 8 is: (4) none of these

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- 7. Two whole numbers are randomly selected & multiplied. The probability that the unit's place in their product is 0 or 5 is : (1) 1/3 (3) 9/25 (4) 1/5 (2) 16/258. An urn contains 6 red and 4 blue balls. Two balls are drawn without replacement. If the probability of the р $^{\mbox{q}}$, where p and q are coprime, then the value of event that 'the second ball drawn is red' is p + q is (1) 10 (2) 8(3)5(4) 49. If the probability that units digit in square of an even integer is 4 is p, then the value of 5p is (1) 1(2) 2(3) 3 (4) 4 A letter is known to have come either from "KRISHNAGIRI" or "DHARMAPURI". On the post mark only 10. the two consecutive letters "RI" are visible. Then the chance that it came from Krishnagiri is: (1) 3/5 (2) 2/3(3) 9/14(4) none of these 11. A card is drawn from a pack, the card is replaced & the pack shuffled. If this is done 6 times, the probability that the cards drawn are 2 hearts, 2 diamonds & 2 black cards is : (3) 1/1024 (1) 90/1024(2) 45/1024 (4) 45/256 12. In an experimental performance of a single throw of a pair of unbiased normal dice, three events E_1 , E_2 & E₃ are defined as follows: E₁: getting a prime numbered face on each dice E₂: getting the same number on each dice E3: getting a sum on two dice equal to 8. Then: (1) the events E₁, E₂ & E₃ are not mutually exclusive (2) the events E1, E2 & E3 are not pairwise mutually exclusive (3) $P(E_3 \square E_1) = 2/9$. (4) All of these 13. A student appears for tests I, II & III. The student is successful if he passes either in tests I & II or tests I & III. The probabilities of the student passing in the tests I, II & III are p, q & 1/2 respectively. If the probability that the student is successful is 1/2, then: (1) p = 1, q = 0(2) p = 2/3, q = 1/2(3) p = 3/5, q = 2/3(4) All of these In throwing a die let A be the event 'coming up of an odd number', B be the event 'coming up of an even 14. number', C be the event 'coming up of a number \geq 4' and D be the event 'coming up of a number < 3', then (1) A and B are mutually exclusive and exhautive (2) A and C are mutually exclusive and exhautive (3) B, C and D form an exhautive system (4) All of these 15. In a purse there are 10 coins, all 5 paise except one which is a rupee. In another purse there are 10 coins all 5 paise. 9 coins are taken out from the former purse & put into the latter & then 9 coins are taken out from the latter & put into the former. Then the chance that the rupee is still in the first purse is: (2) 10/19 (1) 9/19(3) 4/9 (4) none of these
 - **16.** A, B, C in order draw a card from a pack of cards, replacing them after each draw, on condition that the first who draws a spade shall win a prize. Their respective chances of winning are

	(1), $\frac{16}{37}$, $\frac{12}{37}$, $\frac{9}{37}$	(2) $\frac{12}{37}$, $\frac{16}{37}$, $\frac{9}{37}$	(3) $\frac{1}{2}, \frac{1}{3}, \frac{1}{6}$	(4) None of these
17.	Among 2 children, a ch	ild may equally be a boy	or a girl if the probability	that exactly one of them is a boy
	is p, then 6p = (1) 1	(2) 2	(3) 3	(4) 4
18.	A local post office is channels, (N > M). Eac than one telegram will	to send M telegrams w ch telegram is sent over a be sent over each chanr	vhich are distributed at any channel with equal p nel is:	random over N communication probability. Chance that not more
	(1) $\frac{{}^{N}C_{M} \cdot M!}{N^{M}}$	(2) $\frac{{}^{N}C_{M} \cdot N!}{M^{N}}$	(3) 1 - $\frac{{}^{N}C_{M} \cdot M!}{M^{N}}$	(4) 1 - $\frac{{}^{N}C_{M} \cdot N!}{N^{M}}$
19.	Out of 11 persons sittir that no two of these an	ng at a round table, 3 per e sitting next to one anot	sons A, B & C are chose her is	n at random, then the probability
	2		7	$\frac{4}{2}$
	(1) 15	(2) 11	(3) 15	(4) 9
20.	A biased coin with probability that the num	cability p, 0 nber of tosses required is	ads is tossed until a hea s even is 2/5, then p equ	d appears for the first time. If the als
	5	1	<u>1</u>	1
	(1) 16	(2) 2	(3) 5	(4) 3
21.	A boy has 20% chance	e of hitting at a target. Le	et p denote the probabilit	ty of hitting the target for the first
	time at the nth trial. If p	satisfies the inequality 6	$25p_2 - 175p + 12 < 0$, the	en value of n is
	(1) 1	(2) 3	(3) 2	(4) 4
22.	The probability of a hit hit is -	in a single shot is 3/5. T	Then the probability that	three shots will yield atleast one
	117	9	119	121
	(1) 125	(2) 125	(3) 125	(4) 125

PART - II : MISCELLANEOUS QUESTIONS

Section (A) : ASSERTION/REASONING

DIRECTIONS :

Each question has 4 choices (1), (2), (3) and (4) out of which ONLY ONE is correct.

- (1) Both the statements are true.
- (2) Statement-I is true, but Statement-II is false.
- (3) Statement-I is false, but Statement-II is true.
- (4) Both the statements are false.
- A-1. Statement-1 : Since sample space of the experiment 'A coin is tossed if it turns up head, a die is thrown' is {(H, 1), (H, 2), (H, 3), (H, 4), (H, 5), (H, 6), T}.

3

Prob. of the event {(H, 1), (H, 2), (H, 5)} is $\overline{7}$

Statement-2: If all the sample points in the sample space of an experiment are pair wise mutually exclusive, equally likely and exhaustive, then probability of an event E is defined as

...

number of sample points favourable to the event E

Total number of sample points in the sample space P(E) =

A-2. **Statement-1**: If A and B are two independent events such that $P(A) \neq 0$, $P(B) \neq 0$, then A and B can not be mutually exclusive.

Statement-2: For non-zero independent events A and B, we have P(A/B) = P(A) which is not so for mutually exclusive events.

$$1+4P$$
 $1-P$ $1-2P$

4, 4 are probabilities of three pair-wise mutually exclusive events, then Statement 1 : If 4 , A-3.

 $\left[\frac{1}{4},\frac{1}{2}\right]$

the possible values of P belong to the set

<u>1+4P</u> <u>1-P</u> <u>1-2P</u>

Statement 2 : If 4, 4, 4, 4 three events are pair wise mutually exclusive and exhaustive then sum of their probabilities is equal to 1.

3

- 1

Consider the system of equations A-4. ax + by = 0; cx + dy = 0, where a, b, c, $d \in \{0, 1\}$

> **Statement-1** : The probability that the system of equations has a unique solution is $\overline{8}$. and

Statement-2: The probability that the system of equations has a solution is 1.

Section (B) : MATCH THE COLUMN

B-1. 5 Card and 5 envelopes are numbered 1,2, 3,4,5 and cards are to be placed in envelopes so that each envelope contains exaclty one card. Then match the probability of the following

	Colu	ımn - I					Column
							1
(P)	Exac	clty 2 car	d goes t	o correc	t envelopes	(1)	12
(Q)	Exa	clty 3 ca	rd goes	to correc	ct envelopes	(2)	120
							1
(R)	At le	ast two c	ards go	es to the	correct envelopes	(3)	6
							31
(S)	No c	ard is pla	aced in e	envelop l	bearing the same	(4)	120
	num	ber and i	moreove	er the car	rd number 1 is always		
	place	ed envelo	ope num	bered 2			
Code	s :						
	Р	Q	R	S			
(1)	1	2	4	3			
(2)	2	1	3	2			
(3)	3	4	1	2			
(4)	3	1	4	2			

Section (C) : ONE OR MORE THAN ONE OPTIONS CORRECT

- **C-1.** A, B, C are three events for which P(A) = 0.4, P(B) = 0.6, P(C) = 0.5, $P(A \cup B) = 0.75$, $P(A \cap C) = 0.35$ and $P(A \cap B \cap C) = 0.2$. If $P(A \cup B \cup C) \ge 0.75$, then $P(B \cap C)$ can take values (1) 0.1 (2) 0.2 (3) 0.3 (4) 0.5
- C-2. A bag contains four tickets marked with 112, 121, 211, 222 one ticket is drawn at random from the bag. Let E_i (i = 1, 2, 3) denote the event that ith digit on the ticket is 2. Then
 (1) E₁ and E₂ are independent
 (2) E₂ and E₃ are independent
 (3) E₃ and E₁ are independent
 (4) E₁, E₂, E₃ are independent
- **C-3.** For $P(A) = \frac{3}{8}$; $P(B) = \frac{1}{2}$; $P(A \cup B) = \frac{5}{8}$ which of the following do/does hold good? (1) P(Ac/B) = 2P(A/Bc)(3) $P(Ac/Bc) = P(A \cup B)$ (4) $P(A/Bc) = P(A \cap B)$
- **C-4.** Two players A and B toss a fair coin in the cyclic order A, A, B, A, A, B,...... till a head appears. Let α and β denote the probabilities that A and B respectively get the head first, then

(1)
$$\alpha = \frac{6}{7}$$
 (2) $\alpha = \frac{5}{7}$ (3) $\beta = \frac{1}{7}$ (4) $\beta = \frac{2}{7}$

 $\label{eq:c-5.} C-5. Two whole numbers are randomly selected and multiplied. Consider two events E_1 and E_2 defined as$

(2) E_1 and E_2 are disjoint

(4) $P(E_1/E_2) = 1$

- E1: Their product is divisible by 5
- E_2 : Unit's place in their product is 5
- Which of the following statement(s) is/are correct?

(1) E1 is twice as likely to occur as E2

(3) $P(E_2/E_1) = 1/4$

Exercise-3

Marked Questions may have for Revision Questions.

* Marked Questions may have more than one correct option.

PART - I : JEE (MAIN) / AIEEE PROBLEMS (PREVIOUS YEARS)

1. A problem in mathematics is given to three students A, B, C and their respectively probability of solving

the problem is $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$. Probability that the problem is solved, is [AIEEE 2002, (3, -1), 225] (1) 3/4 (2) 1/2 (3) 2/3 (4) 1/3

2. A and B play a game where each is asked to select a number from 1 to 25. If the two numbers match, both of them win a prize. The probability that they will not win a prize in a single trial, is

[AIEEE 2002, (3, -1), 225]

$$1 \\ (1)$$
 $\frac{1}{25}$ $\frac{24}{25}$ $\frac{2}{25}$ (3) $\frac{2}{25}$ (4) None of these3.If A and B are two mutually exclusive events, then
 (1) P(A) < P(\overline{B}) (2) P(A) > P(\overline{B}) (3) P(A) < P(B) (4) None of these

4.	The probability of Ind match to match. The	ia winning a test match a probability that in a ma	against West-Indies is 1/ tch series India's second	² assuming independence from d win occurs at the third test is [AIEEE 2002, (3, −1), 225]
	$(1) \frac{1}{8}$	(2) $\frac{1}{4}$	$(3) \frac{1}{2}$	$(4) \frac{2}{3}$
5.	A biased coin with proprobability that the nu	bbability p, 0 mber of tosses required is	eads is tossed until a hea s even, is 2/5, then p equ	d appears for the first time. If the
	$(1) \frac{1}{3}$	(2) $\frac{2}{3}$	$(3) \frac{2}{5}$	[AIEEE 2002, (3, –1), 225] <u>3</u> (4) 5
6.	A fair die is tossed eig	ght times. The probability	that a third six is observe	ed on the eight throw, is [AIEEE 2002, (3, –1), 225]
	(1) $\frac{{}^7C_2 \times 5^5}{6^7}$	(2) $\frac{{}^7C_2 \times 5^5}{6^8}$	(3) $\frac{{}^7C_2 \times 5^5}{6^6}$	(4) None of these
7.	Five horses are in a r that Mr. A selected th	ace. Mr. A selects two of e winning horse, is :	the horses at random ar	nd bets on them. The probability [AIEEE 2003, (3, –1), 225]
	(1) $\frac{4}{5}$	(2) $\frac{3}{5}$	(3) 5	$(4)^{\frac{2}{5}}$
8.	Events A, B, C are main The set of possible va	utually exclusive events s alues of x are in the interva	uch that P(A) = $\frac{3x+1}{3}$, F al :	$P(B) = \frac{1-x}{4} \text{ and } P(C) = \frac{1-2x}{2}.$ [AIEEE 2003, (3, -1), 225]
	$(1)\left[\frac{1}{3}, \frac{1}{2}\right]$	$(2)\left[\frac{1}{3},\frac{2}{3}\right]$	$(3)\left[\frac{1}{3},\frac{13}{3}\right]$	(4) [0, 1]
9.	The mean and varian then $P(X = 1)$ is :	ce of a random variable 2	X having a binomial distri	ibution are 4 and 2 respectively, [AIEEE 2003, (3, -1), 225]
	(1) $\frac{1}{32}$	(2) $\frac{1}{16}$	(3) $\frac{1}{8}$	(4) $\frac{1}{4}$
10.	The probability that A contradict each other (1) 3/20	A speaks truth is 4/5 whi when asked to speak on (2) 1/5	le this probability for B a fact, is : (3) 7/20	is 3/4. The probability that they [AIEEE 2004 (3,-1), 225] (4) 4/5
10. 11.	The probability that A contradict each other (1) 3/20 A random variable X I	A speaks truth is 4/5 whi when asked to speak on (2) 1/5 has the probability distribu	le this probability for B a fact, is : (3) 7/20 ution :	is 3/4. The probability that they [AIEEE 2004 (3,-1), 225] (4) 4/5 [AIEEE 2004 (3,-1), 225]
10. 11.	The probability that A contradict each other (1) 3/20 A random variable X I $\begin{array}{c c} X : & 1 \\ \hline P(X) : & 0.15 \\ \hline \end{array}$ For the events E = {X (1) 0.87	A speaks truth is 4/5 whi when asked to speak on (2) 1/5 has the probability distribu 2 3 4 0.23 0.12 0.10 is a prime number} and F (2) 0.77	le this probability for B a fact, is : (3) 7/20 ution : 5 6 70.20 0.08 0.07 $= \{X < 4\}$, the probability (3) 0.35	is 3/4. The probability that they [AIEEE 2004 (3,−1), 225] (4) 4/5 [AIEEE 2004 (3,−1), 225]
10. 11. 12.	The probability that A contradict each other (1) 3/20 A random variable X I $\begin{array}{r rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	A speaks truth is 4/5 whi when asked to speak on (2) 1/5 has the probability distribu 2 3 4 0.23 0.12 0.10 is a prime number} and F (2) 0.77 riance of a binomial distri	lle this probability for B a fact, is : (3) 7/20 ution : $\frac{5 6 7}{0.20} 0.08 0.07$ $F = \{X < 4\}, the probability(3) 0.35bution are 4 and 2 respe$	is 3/4. The probability that they [AIEEE 2004 (3,-1), 225] (4) 4/5 [AIEEE 2004 (3,-1), 225] $\boxed{100}$ $\boxed{1000}$ $\boxed{1000}$ $\boxed{1000}$ $\boxed{100}$ 100
10. 11. 12.	The probability that A contradict each other (1) 3/20 A random variable X I X: 1 P(X): 0.15 For the events E = {X (1) 0.87 The mean and the vasuccesses is : 37	A speaks truth is 4/5 whi when asked to speak on (2) 1/5 has the probability distribu 2 3 4 0.23 0.12 0.10 is a prime number} and F (2) 0.77 riance of a binomial distri 219	le this probability for B a fact, is : (3) 7/20 ution : $\frac{5 6 7}{0.20}$ 0.08 0.07 $^{F} = \{X < 4\}, \text{ the probability} (3) 0.35$ bution are 4 and 2 respe	is 3/4. The probability that they [AIEEE 2004 (3,-1), 225] (4) 4/5 [AIEEE 2004 (3,-1), 225]

		$P(\overline{A \cup B})$	$=\frac{1}{2}$ $\frac{1}{2}$	$P(\overline{A}) = \frac{1}{2}$
13.	Let A and B be two ev	vents such that	6 , P(A \cap B) = 4 and	4, where A stands for
	(1) mutually exclusive	and independent	(2) independent but no	[AIEEE 2005 (3, -1), 225] t equally likely
	(3) equally likely but no	ot independent	(4) equally likely and m	nutually exclusive
14.	Three houses are avail	able in a locality. Three p	persons apply for the hou	ses. Each applies for one house
	without consulting othe	ers, The probability that a	If the three apply for the	same house, is : [AIFFF 2005 (3 -1) 225]
	(1) 7/9	(2) 8/9	(3) 1/9	(4) 2/9
15.	A pair of fair dice is thro	own independently three	times. The probability of	getting a score of exactly 9 twice
	is (1) 1/720	(2) 8/0	(2) 8/720	[AIEEE 2007 (3, –1), 120]
	(1) 1/729	(2) 8/9	(3) 6/729	(4) 0/243
16.	I wo aeroplanes I and	II bomb a target in succ	cession. The probability will bomb only if the first r	of I and II scoring a hit correctly
	that the target is hit by	the second plane is	[AIEE]	E 2007 (3, –1), 120]
	(1) 0.06	(2) 0.14	(3) 0.32	(4) 0.7
			1 (A) 1	(B) 2
17.	It is given that the ever	nts A and B are such that	$P(A) = \frac{1}{4}, P\left(\frac{B}{B}\right) = \frac{1}{2}$	and $P^{\lfloor \overline{A} \rfloor} = \frac{\overline{3}}{3}$. Then, P(B) is
	Ū			[AIEEE 2008 (3, -1), 105]
	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{2}{2}$	$\frac{1}{2}$
	(1) ⁶	(2) 3	(3) 3	(4) 2
18.	A die is thrown. Let A b number obtained is les	e the event that the num s than 5. Then $P(A \cup B)$	ber obtained is greater th is	nan 3. Let B be the event that the [AIEEE 2008 (3, -1), 105]
	$\frac{3}{5}$			$\frac{2}{5}$
	(1) 5	(2) 0	(3) 1	(4) 5
		$\left(n, p = \frac{1}{4} \right)$		
19.	In a binomial distributio	on B \ , if the pr	robability of at least one	success is greater than or equal
	to $\frac{3}{10}$ then n is greate	er than ·		[AIEEE 2009 (4, -1), 144]
	1	9	4	1
	(1) $\overline{\log_{10} 4 + \log_{10} 3}$	(2) $\overline{\log_{10} 4 - \log_{10} 3}$	(3) $\overline{\log_{10} 4 - \log_{10} 3}$	(4) $\overline{\log_{10} 4 - \log_{10} 3}$
20.	One ticket is selected a	at random from 50 tickets	s numbered 00, 01, 02,	, 49. Then the probability that
	the sum of the digits or	n the selected ticket is 8,	given that the product of	f these digits is zero, equal : [AIFFF 2009 (4 –1) 144]
	1	5	1	1
	(1) 7	(2) 14	(3) 50	(4) 14
21.	Four numbers are chosen	sen at random (without re	eplacement) from the set	t {1,2,3,,20}.
	Statement -1 : The p	robability that the choser	n numbers when arrange	ed in some order will form an AP
	$\frac{1}{85}$			
	is ^{ou} .			[AIEEE 2010 (8, –2), 144]

Statement -2 : If the four chosen numbers form an AP, then the set of all possible values of common difference is $\{\pm 1, \pm 2, \pm 3, \pm 4, \pm 5\}$

(2) Statement-1 is true, Statement-2 is false.(3) Statement -1 is false, Statement -2 is true.

1.

Probability

(1) Statement -1 is true, Statement-2 is true; Statement -2 is not a correct explanation for Statement -

(4) Statement -1 is true, Statement -2 is true; Statement-2 is a correct explanation for Statement-1. 22. An urn contains nine balls of which three are red, four are blue and two are green. Three balls are drawn at random without replacement from the urn. The probability that the three balls have different colours is [AIEEE 2010 (4, -1), 144] 2 (4) 3 (1) 7 23 (2) 21 (3)Consider 5 independent Bernoulli's trials each with probability of success p. If the probability of at least 23. 31 one failure is greater than or equal to 32 , then p lies in the interval : [AIEEE 2011, I, (4, -1), 120] $(2)\left(\frac{3}{4},\frac{11}{12}\right]$ $(3)\left[0,\frac{1}{2}\right]$ $(4)\left(\frac{11}{12},1\right)$ $\left(\frac{1}{2},\frac{3}{4}\right)$ 24. If C and D are two events such that C D and $P(D) \neq 0$, then the correct statement among the following [AIEEE 2011, I, (4, -1), 120] is : (2) $P(C|D) \ge P(C)$ (3) P(C|D) < P(C) (4) P(C|D) = P(C)(1) P(C|D) = P(C)Let A, B, C be pariwise independent events with P(C) > 0 and $P(A \cap B \cap C) = 0$. 25. Then $\frac{P(A^c \cap B^c / C)}{P(B_c)}$. (2) $P(A_c) + P(B_c)$ [AIEEE 2011, II, (4, -1), 120] (3) $P(A_c) - P(B_c)$ (4) $P(A_c) - P(B)$ 26. Three numbers are chosen at random without replacement from {1, 2, 3, ..., 8}. The probability that their minimum is 3, given that their maximum is 6, is : [AIEEE-2012, (4, -1)/120] 3 2 (2) 5 (3) 4 (1) 8 (4) 5 A multiple choice examination has 5 questions. Each question has three alternative answers of which 27. exactly one is correct. The probability that a student will get 4 or more correct answers just by guessing [AIEEE - 2013, (4, - 1) 120] is : 17 (3) $\frac{11}{3^5}$ (2) $\frac{15}{3^5}$ (4) 3⁵ (1) ^{3⁵} $P(\overline{A \cup B}) = \frac{1}{6}$, $P(A \cap B) = \frac{1}{4}$ and $P(\overline{A}) = \frac{1}{4}$, where \overline{A} stands for 28. Let A and B be two event such that the complement of the event A. Then the events A and B are : [JEE(Main) 2014,(4,-1), 120] (1) independent but not equally likely (2) independent and equally likely (3) mutually exclusive and independent (4) equally likely but not independent 29. If 12 identical balls are to be placed in 3 identical boxes, then the probability that one of the boxes contains [JEE(Main) 2015, (4, -1), 120] exactly 3 balls is $22\left(\frac{1}{3}\right)$ (2) $55\left(\frac{2}{3}\right)^1$ 28 |

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30.	Let two fair six-faced di E ₂ is the event that die then whic h of the follow (1) E ₂ and E ₃ are indep (3) E ₁ , E ₂ and E ₃ are indep	ce A and B be thrown sin B shows up two and E ₃ i wing statements is NOT ⁻ endent dependent	multaneously. If E ₁ is the s the event that the sum True ? [JEE(N (2) E ₁ and E ₃ are indepe (4) E ₁ and E ₂ are indepe	event that die A shows up four, of numbers on both dice is odd, Iain) 2016, (4, – 1), 120] endent endent
31.	For three events A, B a	nd C, P(Exactly one of A	or B occurs) = P(Exactly	/ one of B or C occurs)
		1		<u>1</u>
	= P(Exactly one of C or	A occurs) = 4 and P (λ	All the three events occur	r simultaneously) = ⁶ .
	Then the probability tha	at at least one of the even	nts occurs, is : [JEE(N	lain) 2017, (4, – 1), 120]
	$(1) \frac{7}{32}$	$\frac{7}{16}$	$(2) \frac{7}{64}$	$(1) \frac{7}{16}$
		(2) 10		(4) ¹
32.	as absolute difference a	are taken from the set {(are both multiple of 4, is	J,1,2,3,, 10}; then the [[JEE(Main) 20	probability that their sum as well 17, (4, – 1), 120]
	$\frac{6}{55}$	$\frac{12}{55}$	$\frac{14}{45}$	$\frac{7}{55}$
	(1) 55	(2) 55	(3) 45	(4) 55
33.	A box contains 15 gr	een and 10 yellow bal	ls. If 10 balls are rand	omly drawn, one-by-one, with
	replacement, then the v	ariance of the number o	f green balls drawn is	Tain) 2017 $(4 - 1)$ 1201
	12			6
	(1) 5	(2) 6	(3) 4	(4) 25
		(_) -		
	PART - II : JEE (A	DVANCED) / IIT-JE	EE PROBLEMS (PR	REVIOUS YEARS)
1	If P (B) = $\frac{3}{4}$ P (A \cap B ($\overline{C}_{A} = \frac{1}{3}_{A} \operatorname{Ad} \mathbf{P} \left(\overline{A} \cap \mathbf{B} \right)$	$B \cap \overline{C} = \frac{1}{3}$ then P (B)	C) is:
	(_) ,. () (110)	,	E 2003. Scr. (3. –1). 841
	(A) 1/12	(B) 1/6	(C) 1/15	(D) 1/9
2.	Two numbers are select The probability that mir	cted randomly from the s nimum of the two number	et S = {1, 2, 3, 4, 5, 6} w s is less than 4 is:	ithout replacement one by one.
			[IIT-JE	E 2003, Scr. (3, −1), 84]
	(A) 1/15	(B) 14/15	(C) 1/5	(D) 4/5
3.	Three distinct numbers numbers are divisible b	s are selected from first y 2 and 3 is	100 natural numbers. T [IIT-JE	he probability that all the three E 2004, Scr. (3, –1), 84]
	4	4	4	4
	(A) 25	(B) 35	(C) 55	(D) 1155
4.	Let Ec denote the comp	lement of an event E. Le	et E, F, G be pairwise ind	ependent events with
	$P(G) > 0$ and $P(E \cap F \cap$ (A) $P(E_c) + P(F_c)$	G) = 0. Then P (Ec ∩ F (B) P(Ec) – P(Fc)	C G) equals [IIT-JE (C) P(E _c) – P(F)	E 2007, Paper-2, (3, –1), 81] (D) P(E) – P(F₀)
5.	One Indian and four A	merican men and their w	vives are to be seated ra	ndomly around a circular table
01	Then the conditional p American man is seate	probability that the India diacent to his wife is	n man is seated adjace	Paper-1. (3, -1), 811
		-	,	- · · · · ·
	1	1	2	
	(A) $\frac{1}{2}$	(B) $\frac{1}{3}$	(C) $\frac{2}{5}$	(D) $\frac{1}{5}$

•	An experiment has consists of 4 outco	s 10 equally likely outcon omes, the number of outo	nes. Let A and B be comes that B must h	non-empty events of the experiment. If A ave so that A and B are independent, is IIIT-JEE 2008. Paper-2. (3. –1). 811
	(A) 2, 4 or 8	(B) 3, 6 or 9	(C) 4 or 8	(D) 5 or 10
Compr	ehension # 1 (7 to A fair die is tossed	9) I repeatedly until a six is	obtained. Let X den	ote the number of tosses required.
7.	The probability tha 25	at X = 3 equals 25	5	[IIT-JEE 2009, Paper-1, (4, −1), 80] 125
	(A) 216	(B) 36	(C) 36	(D) 216
8.	The probability that	at $X \ge 3$ equals	_	[IIT-JEE 2009, Paper-1, (4, –1), 80]
	125	$\frac{25}{26}$	$\frac{5}{26}$	25
	(A) 216	(B) ³⁰	(C) ³⁶	(D) 216
9.	The conditional pr	obability that $X \ge 6$ given	X > 3 equals	[IIT-JEE 2009, Paper-1, (4, –1), 80]
	125	25	5	25
	(A) 216	(B) ²¹⁶	(C) ³⁶	(D) ³⁶
40			$\frac{4}{5}$ $\frac{1}{5}$	······································
10.	A signal which cai	n be green or red with pr	obability and a	respectively, is received by station A and $\frac{3}{2}$
	then transmitted to signal received at	o station B. The probabi station B is green, then t	ility of each station he probability that th	receiving the signal correctly is ⁴ If the ne original signal was green is
				IIIT-JEE 2010, Paper-2, (5, -2), 791
	3	6	20	[IIT-JEE 2010, Paper-2, (5, –2), 79] 9
	(A) ³ / ₅	(B) ⁶ / ₇	(C) ²⁰ / ₂₃	[IIT-JEE 2010, Paper-2, (5, –2), 79] (D) ⁹ / ₂₀
11.	(A) $\frac{3}{5}$ Let ω be a complete	(B) $\frac{6}{7}$ ex cube root of unity with	(C) $\frac{20}{23}$ n ω ≠ 1. A fair die is	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\begin{array}{c} 9\\ (D) \end{array}$ thrown three times. If r_1 , r_2 and r_3 are the
11.	(A) $\frac{3}{5}$ Let ω be a complet numbers obtained	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prot	(C) $\frac{20}{23}$ in $\omega \neq 1$. A fair die is pability that $\omega^{r_1} + \omega^{r_2}$	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\begin{array}{r} 9\\ (D) \end{array} \xrightarrow{9}{20} \end{array}$ thrown three times. If r ₁ , r ₂ and r ₃ are the $e^{2} + \omega^{r_{3}} = 0$ is
11.	(A) $\frac{3}{5}$ Let ω be a complet numbers obtained	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prob	(C) $\frac{20}{23}$ $\omega \neq 1$. A fair die is pability that $\omega^{r_1} + \omega^{r_2}$	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\begin{array}{r} 9\\ (D) \end{array} \xrightarrow{9}{20}$ thrown three times. If r ₁ , r ₂ and r ₃ are the $r^{2} + \omega^{r_{3}} = 0$ is [IIT-JEE 2010, Paper-1, (3, -1), 84]
11.	(A) $\frac{3}{5}$ Let ω be a complet numbers obtained (A) $\frac{1}{18}$	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prot (B) $\frac{1}{9}$	(C) $\frac{20}{23}$ $\omega \neq 1$. A fair die is pability that $\omega^{r_1} + \omega^{r_2}$ (C) $\frac{2}{9}$	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\begin{array}{r} 9\\ (D) \end{array}^{\frac{9}{20}}\\ \text{thrown three times. If } r_1, r_2 \text{ and } r_3 \text{ are the}\\ r_2 + \omega^{r_3} = 0 \text{ is}\\ \text{[IIT-JEE 2010, Paper-1, (3, -1), 84]}\\ (D) \end{array}$
11.	(A) $\frac{3}{5}$ Let ω be a completing numbers obtained (A) $\frac{1}{18}$	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prob (B) $\frac{1}{9}$	(C) $\frac{20}{23}$ $\omega \neq 1$. A fair die is pability that $\omega^{r_1} + \omega^{r_2}$ (C) $\frac{2}{9}$	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\begin{array}{r} 9\\ (D) \end{array}^{\frac{9}{20}}\\ \text{thrown three times. If } r_1, r_2 \text{ and } r_3 \text{ are the}\\ r_2 + \omega^{r_3} = 0 \text{ is}\\ \text{[IIT-JEE 2010, Paper-1, (3, -1), 84]}\\ (D) \end{array}^{\frac{1}{36}}\\ \text{(D)} \end{array}$
11. 12*.	$\frac{3}{5}$ Let ω be a complete numbers obtained (A) $\frac{1}{18}$ Let E and F be two	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prob (B) $\frac{1}{9}$ o independent events. T	$\frac{20}{(C)} \frac{20}{23}$ In $\omega \neq 1$. A fair die is bability that $\omega^{r_1} + \omega^{r_2}$ $\frac{2}{9}$ he probability that e	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\binom{9}{20}$ thrown three times. If r ₁ , r ₂ and r ₃ are the $e + \omega^{r_3} = 0$ is [IIT-JEE 2010, Paper-1, (3, -1), 84] $\binom{1}{36}$ exactly one of them occurs is $\frac{11}{25}$ and the
11. 12*.	$\frac{3}{5}$ Let ω be a complete numbers obtained (A) $\frac{1}{18}$ Let E and F be two probability of none then	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prob (B) $\frac{1}{9}$ to independent events. T	$\frac{20}{(C)} \frac{20}{23}$ In $\omega \neq 1$. A fair die is pability that $\omega^{r_1} + \omega^{r_2}$ $\frac{2}{9}$ the probability that end if P(T) denotes the	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\begin{array}{r} 9\\ (D) \end{array}^{\frac{9}{20}}\\ \begin{array}{r} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
11. 12*.	(A) $\frac{3}{5}$ Let ω be a completing obtained numbers obtained (A) $\frac{1}{18}$ Let E and F be two probability of none then $\frac{4}{5}$	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prot (B) $\frac{1}{9}$ to independent events. T a of them occurring is $\frac{2}{25}$	(C) $\frac{20}{23}$ $\omega \neq 1$. A fair die is bability that $\omega^{r_1} + \omega^{r_2}$ (C) $\frac{2}{9}$ he probability that e $\overline{5}$ If P(T) denotes the	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\begin{array}{r} 9\\ (D) \end{array}^{\frac{9}{20}}\\ \begin{array}{r} 0\\ (D) \end{array}^{\frac{9}{20}}\\ \begin{array}{r} 0\\ (D) \end{array}^{\frac{1}{20}}\\ \begin{array}{r} 0\\ (D) \end{array}^{\frac{1}{36}}\\ \begin{array}{r} 0\\ (D) \end{array}^{\frac{1}{36}}\\ \begin{array}{r} 0\\ (D) \end{array}^{\frac{11}{25}}\\ \end{array}^{\frac{11}{25}}\\ \begin{array}{r} 0\\ (D) \end{array}^{\frac{11}{25}}\\ \begin{array}{r} 0\\ (D) \end{array}^{\frac{11}{25}}\\ \end{array}^{\frac{11}{25}}\\ \begin{array}{r} 0\\ \end{array}^{\frac{11}{25}}\\ \end{array}^{\frac{11}{25}}\\$
11. 12*.	(A) $\frac{3}{5}$ Let ω be a completing obtained numbers obtained (A) $\frac{1}{18}$ Let E and F be two probability of none then (A) P(E) = $\frac{4}{5}$, P(F	(B) $\frac{6}{7}$ ex cube root of unity with on the die, then the prot (B) $\frac{1}{9}$ to independent events. T e of them occurring is $\frac{2}{25}$ $r) = \frac{3}{5}$	(C) $\frac{20}{23}$ $\omega \neq 1$. A fair die is pability that $\omega^{r_1} + \omega^{r_2}$ (C) $\frac{2}{9}$ he probability that e $\overline{\delta}$ If P(T) denotes the (B) P(E) = $\frac{1}{5}$	[IIT-JEE 2010, Paper-2, (5, -2), 79] $\frac{9}{(D)} \frac{9}{20}$ thrown three times. If r ₁ , r ₂ and r ₃ are the $e^{2} + \omega^{r_{3}} = 0$ is [IIT-JEE 2010, Paper-1, (3, -1), 84] (D) $\frac{1}{36}$ exactly one of them occurs is $\frac{11}{25}$ and the e probability of occurrence of the event T, [IIT-JEE 2011, Paper-2, (4, 0), 80] , P(F) = $\frac{2}{5}$

 13*. Let X and Y be two events such that P(X Y) = 2, P(Y X) = 3 and P(X ∩ Y) = 6. Which of the following is (are) correct? [IIT-JEE 2012, PAPER- 2, (4, 0)/66] (A) P(X ∪ Y) = 3 (B) X and Y are independent (C) X and Y are not independent (D) P(X_C ∩ Y) = 3 14. Four fair dice D₁, D₂, D₂ and D₂ each having six faces numbered 1, 2, 3, 4, 5 and 6 are rolled simultaneously. The probability that D₂ shows a number appearing on one of D₁, D₂ and D₂ is a factor of D₁. D₂ and D₂ is a factor of D₁. D₁ and D₂ is a factor of D₁. D₂ and D₁ is [IIT-JEE 2012, Paper-2, (3, -1), 66] (A) 91/(B) 108/(C) 125/(216) (B) 216 (C) 125/(216) (D) 127/(216) (D) 127/(216) (D) 127/(216) (D) 127/(216) (D) 127/(216) (D) 225/(216) (D) 127/(216) (D) 225/(256) (D) 127/(216) (D) 225/(256) (C) 325/(256) (D) 255/(256) (C) 325/(256) (D) 256 Comprehension # 2 (16 to 17) A box B: contains 1 white ball, 3 red balls and 2 black balls. Another box B: contains 2 white balls, 3 red balls and 4 black balls. A third box B: contains 3 white balls, 4 red balls and 5 black balls. (I 1 ball is drawn from each of the boxes B:, B: and Bi, the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) 648 (B) 648 (C) 648 (C) 648 (D) 648 116 11 26 56 (A) 181 (B) 181 (C) 181 (D) 181 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) 16/(A) 181 (B) 181 (C) 181 (D) 181 19. One of the two boxes, box I				1 1	1		
is (are) correct ? $\begin{bmatrix} IIT-JEE 2012, PAPER- 2, (4, 0)/66] \\ (A) P(X \cup Y) = \frac{2}{3} \\ (B) X and Y are independent \\ (C) X and Y are not independent \\ (D) P(X_{C} \cap Y) = \frac{1}{3} \\ 14. Four fair dice D_1, D_2, D_3 and D_4 each having six faces numbered 1, 2, 3, 4, 5 and 6 are rolled simultaneously. The probability that D_4 shows a number appearing on one of D, D_2 and D_3 is IIIT-JEE 2012, Paper-2, (3, -1), 66] \begin{bmatrix} 0, \frac{91}{216} & 108 & 125 & 1276 \\ (D) & 216 & (C) & 216 & (D) & 216 \\ (D) & 216 & (D) & 216 & (D) & 216 \\ (D) & 216 & (D) & 216 & (D) & 216 \\ (D) & 216 & (D) & 216 & (D) & 216 \\ (D) & 216 & (D) & 216 & (D) & 216 \\ (D) & 216 & (D) & 216 & (D) & 216 \\ (D) & 216 & (D) & 216 & (D) & 216 \\ (D) & 215 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (D) & 256 & (D) & 256 & (D) & 256 \\ (A) & 648 & (B) & 648 & (C) & 648 & (D) & 648 \\ (B) & 648 & (B) & 648 & (C) & 558 & 566 \\ (A) & 648 & (B) & 648 & (C) & 558 & (D) & 648 \\ (C) & 558 & (D) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (D) & 648 \\ (E) & 648 & (E) & 655 & 648 & (D) & 648 \\ (E) & 648 & (E) & 648 & (E) & 648 \\ (E) & 648 & (E) & 648 & (E) & 648 \\ (E) & 648 & (E) & 648 & (E) & 655 \\ (E) & 181 & (D) & 181 \\ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is \\ [JEE (Advanced) 2013, Paper-2, (3, -1)/60] \\ [JEE (Advanced) 2014, Pap$	13*.	Let X and Y be two	events such that P(X Y	Y) = $\overline{2}$, P(Y X) = $\overline{3}$ and	d P(X \cap Y) = $\overline{6}$. Which of the foll	lowing	
(A) $P(X \cup Y) = \frac{2}{3}$ (B) X and Y are independent (C) X and Y are not independent (D) $P(X_{C} \cap Y) = \frac{1}{3}$ 14. Four fair dice Dr, Dr, Dr, and Dr, each having six faces numbered 1, 2, 3, 4, 5 and 6 are rolled simultaneously. The probability that Dr shows a number appearing on one of Dr, Dr, and Dr is [IIT-JEE 2012, Paper-2, (3, -1), 66] (A) $\frac{91}{216}$ (B) $\frac{108}{216}$ (C) $\frac{215}{216}$ (D) $\frac{127}{216}$ 15. Four persons independently solve a certain problem correctly with probabilities $\frac{1}{2} \cdot \frac{3}{4} \cdot \frac{1}{4} \cdot \frac{1}{8}$. Then the probability that the problem is solved correctly by at least one of them is [JEE (Advanced) 2013, Paper-1, (2, 0)/60] (A) $\frac{235}{256}$ (B) $\frac{21}{256}$ (C) $\frac{3}{256}$ (D) $\frac{253}{256}$ Comprehension # 2 (16 to 17) A box B: contains 1 white ball, 3 red balls and 2 black balls. Another box B: contains 2 white balls, 3 red balls and 4 black balls. A trid box B: contains 1 white balls, 3 red balls and 2 black balls. Another box B: contains 2 white balls, 3 red balls and 4 black balls. A find box B: contains 1 white balls, 5 $\frac{568}{648}$ (D) $\frac{6648}{648}$ (A) $\frac{62}{648}$ (B) $\frac{90}{648}$ (C) $\frac{558}{648}$ (D) $\frac{566}{648}$ (I) $\frac{116}{12}$ (B) $\frac{126}{181}$ (C) $\frac{116}{161}$ (D) $\frac{116}{161}$ 15. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{3}{4}$ Comprehension # 3 (19 to 20) Let n: and n: be the number of red and black balls, respectively, in box I. Let n: and n: be the number of red and black balls, respectively, in box I. Let n: and n: a be the number of red and black balls, respectively, in box I. Let n: and n: a be the number of red and black balls, respectively, in box I. Let n: and n: a be the number of red and black balls, respectively, in box I. Let n: and n: a be the number of red and black balls, respectively, in box I. Let n: and n:		is (are) correct ?		[IIT-JEE	2012, PAPER- 2, (4, 0)/66]	•	
(A) $P(X \cup Y) = \overline{3}$ (B) X and Y are independent (C) X and Y are not independent (D) $P(X = n Y) = \frac{1}{3}$ 14. Four fair dice D, D, D, D and D each having six faces numbered 1, 2, 3, 4, 5 and 6 are rolled simultaneously. The probability that D shows a number appearing on one of D, D and D is [IIT-JEE 2012, Paper-2, (3, -1), 66] (A) $\frac{91}{216}$ (B) $\frac{108}{216}$ (C) $\frac{125}{216}$ (D) $\frac{271}{216}$ 15. Four persons independently solve a certain problem correctly with probabilities $\frac{1}{2}, \frac{3}{4}, \frac{1}{4}, \frac{1}{8}$. Then the probability that the problem is solved correctly by at least one of them is [JEE (Advanced) 2013, Paper-1, (2, 0)/60] (A) $\frac{235}{256}$ (B) $\frac{25}{256}$ (C) $\frac{3}{256}$ (D) $\frac{253}{256}$ Comprehension # 2 (16 to 17) A box B: contains 1 white ball, 3 red balls and 2 black balls. Another box B: contains 2 white balls, 3 red balls and 4 black balls. A third box B: contains 3 white balls, 4 red balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B:, B: and B:, the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] $\frac{82}{(A)}$ $\frac{90}{648}$ (D) $\frac{558}{648}$ (D) $\frac{648}{648}$ 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B: is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] $\frac{(A)}{(A)}$ $\frac{116}{(B)}$ $\frac{126}{181}$ (C) $\frac{65}{181}$ (D) $\frac{55}{181}$ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of right ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] $(A) \frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{3}{4}$ Comprehension # 3 (19 to 20) Let n: and n: be the number of red and black balls, respectively, in box I. Let ns and n: be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2) 80] 19. One of the two boxes, box I 1 and box		2					
(C) X and Y are not independent (D) P(X ₀ ∩ Y) = $\frac{1}{3}$ 14. Four fair dice Dr, D ₂ , D ₃ and D ₄ each having six faces numbered 1, 2, 3, 4, 5 and 6 are rolled simultaneously. The probability that D ₄ shows a number appearing on one of D ₁ , D ₂ and D ₆ is [IIT-JEE 2012, Paper-2, (3, -1), 66] (A) $\frac{91}{216}$ (B) $\frac{108}{216}$ (C) $\frac{125}{216}$ (D) $\frac{127}{216}$ 15. Four persons independently solve a certain problem correctly with probabilities $\frac{1}{2} \cdot \frac{3}{4} \cdot \frac{1}{4} \cdot \frac{1}{8}$. Then the probability that the problem is solved correctly by at least one of them is [JEE (Advanced) 2013, Paper-1, (2, 0)/60] (A) $\frac{235}{256}$ (B) $\frac{21}{256}$ (C) $\frac{3}{256}$ (D) $\frac{255}{256}$ Comprehension # 2 (16 to 17) A box B ₁ contains 1 white ball. 3 red balls and 2 black balls. Another box B ₂ contains 2 white balls, 3 red balls and 4 black balls. A third box B ₂ contains 3 white balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B ₁ . B ₂ and B ₃ , the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] $\frac{82}{648}$ (B) $\frac{648}{648}$ (C) $\frac{655}{648}$ (D) $\frac{648}{648}$ 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B ₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] $\frac{116}{(A)} \frac{126}{181} \frac{65}{181} \frac{65}{181} \frac{55}{181}$ 18. Three boys and two girds stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] $\frac{1}{(A)} \frac{1}{2} \frac{1}{(B)} \frac{1}{3} \frac{2}{(C)} \frac{2}{3} \frac{1}{(D)} \frac{3}{4}$ Comprehension # 3 (19 to 20) Let n and n ₂ be the number of red and black balls, respectively, in box I. Let n ₂ and n ₃ the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2) 80] 19. One of the two boxes, box I I and box II, wa		(A) $P(X \cup Y) = \overline{3}$		(B) X and Y are i	ndependent		
 (C) X and Y are not independent (D) P(Xc ∩ Y) = ³ Four fair dice D₁, D₂, D₃ and D₄ each having six faces numbered 1,2,3,4,5 and 6 are rolled simultaneously. The probability that D₄ shows a number appearing on one of D₁, D₂ and D₃ is [IIT-JEE 2012, Paper-2, (3, -1), 66] (A) ⁹¹/₂₁₆ (B) ¹⁰⁸/₂₁₆ (C) ¹²⁷/₂₁₆ (D) ²¹⁶/₂₁₆ (C) ²¹⁶/₂₁₆ (D) ²³⁵/₄, ¹/₄, ¹/₈. Then the probability that the problem is solved correctly by at least one of them is [JEE (Advanced) 2013, Paper-1, (2, 0)/60] (A) ²⁵⁵/₂₅₆ (B) ²¹⁶/₂₅₆ (C) ³/₂₅₆ (D) ²⁵³/₂₅₆ Comprehension # 2 (16 to 17) A box B: contains 1 white ball, 3 red balts and 2 black balts. Another box B ₂ contains 2 white balls, 3 red balts and 4 black balts. A third box B ₂ contains 3 white balls, 4 red balts and 5 black balls. 16. If 1 ball is drawn from each of the boxes B ₁ , B ₂ and B ₃ , the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) ⁶⁴⁸ / ₆₄₈ (B) ⁶⁴⁸ / ₆₄₈ (C) ⁶⁵⁶ / ₆₄₈ (D) ⁴¹⁶ / ₆₄₈					1		
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Introduct of the basis of probability of the collection of the basis of probability is at least one of the mis91 (A) $\frac{91}{216}$ (B) $\frac{108}{216}$ (C) $\frac{125}{216}$ (D) $\frac{127}{216}$ 15. Four persons independently solve a certain problem correctly with probabilitiesIJEE (Advanced) 2013, Paper-1, (2, 0)/60] (A) $\frac{235}{256}$ (B) $\frac{21}{256}$ (C) $\frac{3}{256}$ (D) $\frac{253}{256}$ Comprehension # 2 (16 to 17)A box B: contains 1 white ball, 3 red balls and 2 black balls. Another box B: contains 2 white balls, 3 red balls and 4 black balls. A third box B: contains 3 white balls, 4 red balls and 5 black balls.16 (A) $\frac{82}{648}$ $\frac{90}{648}$ $\frac{558}{648}$ $\frac{566}{648}$ (IJEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) $\frac{82}{648}$ $\frac{90}{648}$ $\frac{558}{648}$ (B) $\frac{648}{648}$ (C) Get (Advanced) 2013, Paper-2, (3, -1)/60](A) (A) (A) (B) <td colsp<="" th=""><th>14.</th><th>The probability that</th><th>D₄ shows a number an</th><th>pearing on one of D_1</th><th>$_{2}$, $_{3}$, $_{4}$, $_{3}$ and $_{3}$ is</th><th>ousiy.</th></td>	<th>14.</th> <th>The probability that</th> <th>D₄ shows a number an</th> <th>pearing on one of D_1</th> <th>$_{2}$, $_{3}$, $_{4}$, $_{3}$ and $_{3}$ is</th> <th>ousiy.</th>	14.	The probability that	D ₄ shows a number an	pearing on one of D_1	$_{2}$, $_{3}$, $_{4}$, $_{3}$ and $_{3}$ is	ousiy.
91 (A)108 216125 (C)127 216127 (D)127 21615.Four persons independently solve a certain problem correctly with probabilities $\frac{1}{2} \cdot \frac{3}{4} \cdot \frac{1}{4} \cdot \frac{1}{8}$ Then the probability that the problem is solved correctly by at least one of them is [JEE (Advanced) 2013, Paper-1, (2, 0)/60] $\frac{235}{256}$ $\frac{21}{256}$ $(C) \cdot \frac{256}{256}$ (A) $\frac{235}{256}$ (B) $\frac{21}{256}$ $(C) \cdot \frac{256}{256}$ Comprehension # 2 (16 to 17) A box B: contains 1 white ball, 3 red balls and 2 black balls. Another box B_2 contains 2 white balls, 3 red balls and 4 black balls. A third box B_3 contains 3 white balls, 4 red balls and 5 black balls.16.If 1 ball is drawn from each of the boxes B_1 , B_2 and B_3 , the probability that all 3 drawn balls are of the same colour is $[JEE (Advanced) 2013, Paper-2, (3, -1)/60]$ (A) $\frac{82}{648}$ 90 (A) $\frac{62}{648}$ (B) $\frac{648}{648}$ (B) $\frac{126}{648}$ (C) $\frac{558}{648}$ (D) $\frac{566}{648}$ (D) (A) $\frac{116}{181}$ (B) $\frac{126}{181}$ (A) $\frac{126}{181}$ (C) $\frac{65}{181}$ (B) $\frac{126}{181}$ (C) $\frac{131}{181}$ (B) $\frac{126}{3}$ (C) $\frac{3}{3}$ (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (A) $\frac{1}{2}$ (B) $\frac{126}{3}$ (B) $\frac{16}{181}$ (C) $\frac{16}{181}$ (B) $\frac{126}{181}$ (C) $\frac{16}{181}$ (B) $\frac{126}{181}$ (C) $\frac{16}{3}$ <t< th=""><th></th><th></th><th></th><th></th><th>IIT-JEE 2012, Paper-2, (3, –1),</th><th>66]</th></t<>					IIT-JEE 2012, Paper-2, (3, –1),	66]	
 (A) 216 (B) 216 (C) 216 (D) 256 (D) 266 (D) 266		91	108	125	127	-	
 15. Four persons independently solve a certain problem correctly with probabilities ¹/₂, ³/₄, ¹/₄, ¹/₈. Then the probability that the problem is solved correctly by at least one of them is [JEE (Advanced) 2013, Paper-1, (2, 0)/60] (A) ²³⁵/₂₅₆ (B) ²¹/₂₅₆ (C) ³/₂₅₆ (D) ²⁵⁵/₂₅₆ Comprehension # 2 (16 to 17) A box B₁ contains 1 white ball, 3 red balls and 2 black balls. Another box B₂ contains 2 white balls, 3 red balls and 4 black balls. A third box B₃ contains 3 white balls, 4 red balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B₁, B₂ and B₃, the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] ⁸²/₆₄₈ (B) ⁶⁴⁸ (C) ⁵⁵⁸/₆₄₈ (D) ⁶⁴⁸ 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] ¹¹⁶/_(A) ¹¹⁶/₁₈₁ (B) ¹²⁶/₁₈₁ (C) ⁵¹⁸¹ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) ¹²/₂ (B) ¹³/₃ (C) ²/₃ (D) ³/₄ Comprehension # 3 (19 to 20) Let n: and n₂ be the number of red and black balls, respectively, in box 1. Let n₂ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 		(A) 216	(B) 216	(C) 216	(D) 216		
 15. Four persons independently solve a certain problem correctly with probabilities 1/2, 3/4, 1/8. Then the probability that the problem is solved correctly by at least one of them is [JEE (Advanced) 2013, Paper-1, (2, 0)/60] 235 256 (B) 256 (C) 3/256 (D) 256 257 Comprehension # 2 (16 to 17) A box B: contains 1 white ball, 3 red balls and 2 black balls. Another box B₂ contains 2 white balls, 3 red balls and 4 black balls. A third box B₃ contains 3 white balls, 4 red balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B₁, B₂ and B₃, the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] 82/(A) 648 (B) 648 (C) 558 558/(C) 648 (D) 648 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B₂ is and B₂ is a least one more than the number of girls ahead of her, is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) 116/(181) (B) 126 (C) 131((D) 131 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is (JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) 1/2 (B) 1/3 (C) 1/3 (D) 1/4 Comprehension # 3 (19 to 20) Let n: and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. (JEE (Advanced) 2015, P-2 (4, -2)/80]<th></th><th>()</th><th>(-)</th><th>(0)</th><th></th><th></th>		()	(-)	(0)			
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$\frac{235}{(A)} \frac{235}{256} \frac{21}{(B)} \frac{21}{256} \frac{3}{(C)} \frac{253}{256} \frac{253}{(D)} \frac{253}{256}$ Comprehension #2 (16 to 17) A box B ¹ contains 1 white ball, 3 red balls and 2 black balls. Another box B ₂ contains 2 white balls, 3 red balls and 4 black balls. A third box B ₃ contains 3 white balls, 4 red balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B ₁ , B ₂ and B ₃ , the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] $\frac{32}{648} \frac{90}{648} \frac{558}{(C)} \frac{558}{648} \frac{566}{648}$ 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B ₂ is $IJEE (Advanced) 2013, Paper-2, (3, -1)/60]$ $\frac{116}{(A)} \frac{116}{181} \frac{126}{(B)} \frac{126}{181} \frac{65}{(C)} \frac{55}{181} \frac{55}{181}$ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is $IJEE (Advanced) 2014, Paper-2, (3, -1)/60]$ $\frac{1}{(A)} \frac{1}{2} \frac{1}{(B)} \frac{1}{3} \frac{2}{(C)} \frac{2}{3} \frac{1}{(D)} \frac{3}{4}$ Comprehension # 3 (19 to 20) Let n ₁ and n ₂ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₅ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₅ and n ₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of $\frac{1}{1}$			problem is solved come	IJEE (A	dvanced) 2013. Paper-1. (2. 0)/	601	
 (A) 256 (B) 256 (C) 256 (D) 256 Comprehension #2 (16 to 17) A box B ¹ contains 1 white ball, 3 red balls and 2 black balls. Another box B ² contains 2 white balls, 3 red balls and 4 black balls. A third box B ³ contains 3 white balls, 4 red balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B ¹ , B ² and B ³ , the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] a) 82/(A) 648 (B) 648 (C) 658 (C) 648 (D) 666 (D) 766 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B ² is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) 116 (A) 116 (B) 126 (B) 126 (B) 126 (B) 126 (B) 126 (C) 65 (B) 55 (D) 181 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) 12 (B) 13 (C) 23 (D) 34 Comprehension # 3 (19 to 20) Let n ₁ and n ₂ be the number of red and black balls, respectively, in box I. Let n ₂ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1		235	21	3	253	1	
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 A box B: contains 1 white ball, 3 red balls and 2 black balls. Another box B₂ contains 2 white balls, 3 red balls and 4 black balls. A third box B₃ contains 3 white balls, 4 red balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B₁, B₂ and B₃, the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] 82/648 (B) 648 (C) 648 (D) 648 (D) 648 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) 116/(181) (B) 126/(181) (C) 181 (D) 181 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) 12 (B) 13 (C) 2 (C) 3 (D) 3 Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 	Compr	rehension # 2 (16 to	17)	(\mathbf{O})	(2)		
 balls and 4 black balls. A third box B₃ contains 3 white balls, 4 red balls and 5 black balls. 16. If 1 ball is drawn from each of the boxes B₁, B₂ and B₃, the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] a. 82/648 (B) 648 (C) 648 (D) 648 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] a. 116/(A) 116/(181) (B) 126/(181) (C) 05/(181) (D) 158 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] a. 1/2 (B) 1/3 (C) 2/3 (D) 3/4 Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 	••••••p	A box B ₁ contains 1	white ball, 3 red balls a	and 2 black balls. Anoth	er box B ₂ contains 2 white balls	, 3 red	
 16. If 1 ball is drawn from each of the boxes B₁, B₂ and B₃, the probability that all 3 drawn balls are of the same colour is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] 82/648 (B) 648 (C) 648 (D) 664 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) 116/181 (B) 126/181 (C) 65/181 (D) 55/181 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) 1/2 (B) 1/3 (C) 2/3 (D) 3/4 Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 		balls and 4 black ba	alls. A third box B ₃ conta	ains 3 white balls, 4 red	balls and 5 black balls.		
same colour is $\begin{bmatrix} JEE (Advanced) 2013, Paper-2, (3, -1)/60] \\ & \frac{82}{648} & B \\ & (B) \\ \hline 648 & C \\ \hline 648 & C \\ \hline 648 & B \\ \hline 0 \\ \hline 648 & B \\ \hline 0 \\ \hline 648 & C \\ \hline 0 \\ \hline 648 & B \\ \hline 0 \\ \hline 648 & C \\ \hline 0 \\ \hline 1 \\ \hline 0 \\$	16.	If 1 ball is drawn fro	om each of the boxes B	B ₁ , B ₂ and B ₃ , the prob	ability that all 3 drawn balls are	of the	
$\frac{82}{(A)} \frac{90}{648} \frac{558}{(C)} \frac{558}{648} \frac{566}{(D)} \frac{566}{648}$ 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B ₂ is $[JEE (Advanced) 2013, Paper-2, (3, -1)/60]$ $(A) \frac{116}{181} \frac{126}{(B)} \frac{126}{181} \frac{65}{(C)} \frac{55}{181}$ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is $[JEE (Advanced) 2014, Paper-2, (3, -1)/60]$ $(A) \frac{1}{2} (B) \frac{1}{3} (C) \frac{2}{3} (D) \frac{3}{4}$ Comprehension # 3 (19 to 20) Let n ₁ and n ₂ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of $\frac{1}{2}$		same colour is		[JEE (A	dvanced) 2013, Paper-2, (3, –1))/60]	
 (A) 648 (B) 648 (C) 648 (D) 648 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) 116/181 (B) 126/181 (C) 65/181 (D) 1581 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) 1/2 (B) 1/3 (C) 2/3 (D) 3/4 Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of		82	90	558	566		
 17. If 2 balls are drawn (without replacement) from a randomly selected box and one of the balls is white and the other ball is red, the probability that these 2 balls are drawn from box B₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) ¹¹⁶/₁₈₁ (B) ¹²⁶/₁₈₁ (C) ⁶⁵/₁₈₁ (D) ⁵⁵/₁₈₁ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) ¹/₂ (B) ¹/₃ (C) ²/₃ (D) ³/₄ Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 		(A) ⁶⁴⁸	(B) ⁶⁴⁸	(C) ⁶⁴⁸	(D) ⁶⁴⁸		
the other ball is red, the probability that these 2 balls are drawn from box B ₂ is [JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) $\frac{116}{181}$ (B) $\frac{126}{181}$ (C) $\frac{65}{181}$ (D) $\frac{55}{181}$ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{3}{4}$ Comprehension # 3 (19 to 20) Let n ₁ and n ₂ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of $\frac{1}{2}$	17.	If 2 balls are drawn	(without replacement) f	rom a randomly selecte	d box and one of the balls is whi	te and	
[JEE (Advanced) 2013, Paper-2, (3, -1)/60] (A) $\frac{116}{181}$ (B) $\frac{126}{181}$ (C) $\frac{65}{181}$ (D) $\frac{55}{181}$ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{3}{4}$ Comprehension # 3 (19 to 20) Let n ₁ and n ₂ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of I. 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of $\frac{1}{2}$		the other ball is red	, the probability that the	ese 2 balls are drawn fro	pm box B ₂ is	1001	
(A) $\frac{110}{181}$ (B) $\frac{120}{181}$ (C) $\frac{03}{181}$ (D) $\frac{53}{181}$ 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) $\frac{3}{4}$ Comprehension # 3 (19 to 20) Let n ₁ and n ₂ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of $\underline{1}$		116	106	[JEE (A	dvanced) 2013, Paper-2, (3, –1)/60]	
 (A) 101 (B) 101 (C) 101 (D) 101 Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) 1/2 (B) 1/3 (C) 2/3 (D) 3/4 Comprehension # 3 (19 to 20) Let n1 and n2 be the number of red and black balls, respectively, in box I. Let n3 and n4 be the number of red and black balls, respectively, in box I. Let n3 and n4 be the number of red and black balls, respectively, in box I. Let n3 and n4 be the number of red and black balls, respectively, in box I. Let n3 and n4 be the number of red and black balls, respectively, in box II. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1/2 		$\frac{110}{181}$	$\frac{120}{181}$	$\frac{00}{181}$	$\frac{55}{181}$		
 18. Three boys and two girls stand in a queue. The probability, that the number of boys ahead of every girl is at least one more than the number of girls ahead of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) ¹/₂ (B) ¹/₃ (C) ²/₃ (D) ³/₄ Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of <u>1</u> 	40	(A) IOI	(B) ¹⁰¹				
Image: Second control of the function of gins and do included of her, is [JEE (Advanced) 2014, Paper-2, (3, -1)/60] (A) 1/2 (B) 1/3 (C) 1/3 (D) 1/4 Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1	18.	is at least one more	b gins stand in a queue	Ine probability, that the shead of here is	te number of boys arread of eve	ery giri	
 (A) ¹/₂ (B) ¹/₃ (C) ²/₃ (D) ³/₄ Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of <u>1</u> 				IJEE (A	dvanced) 2014. Paper-2. (3. –1))/601	
 (A) 2 (B) 3 (C) 3 (D) 4 Comprehension # 3 (19 to 20) Let n ₁ and n ₂ be the number of red and black balls, respectively, in box I. Let n ₃ and n ₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1		1	1	2	3	,]	
 Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 		$(A)\overline{2}$	(B) 3	(C) $\frac{3}{3}$	$(D) \frac{1}{4}$		
 Comprehension # 3 (19 to 20) Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 		(, ,	(2)	(0)	(2)		
 Let n₁ and n₂ be the number of red and black balls, respectively, in box I. Let n₃ and n₄ be the number of red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of 1 	Compr	ehension # 3 (19 to	20)				
 red and black balls, respectively, in box II. [JEE (Advanced) 2015, P-2 (4, -2)/ 80] 19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of <u>1</u> 		Let n_1 and n_2 be the	e number of red and bla	ack balls, respectively, i	h box I. Let n_3 and n_4 be the num	ber of	
19. One of the two boxes, box I and box II, was selected at random and a ball was drawn randomly out of <u>1</u>		red and black balls,	respectively, in box II.	[JEE (A	dvanced) 2015, P-2 (4, –2)/ 80]		
<u>1</u>	19.	One of the two box	es, box I and box II, w	as selected at random	and a ball was drawn randomly	out of	
						1	
this box. The ball was found to be red. If the probability that this red ball was drawn from box II is 3 ,		this box. The ball w	vas found to be red. If	the probability that this	red ball was drawn from box II	is ³ ,	
then the correct option(s) with the possible values of n_1 , n_2 , n_3 and n_4 is(are)							
(A) $n_1 = 3$, $n_2 = 3$, $n_3 = 5$, $n_4 = 15$ (B) $n_1 = 3$, $n_2 = 6$, $n_3 = 10$, $n_4 = 50$		then the correct opt	tion(s) with the possible	values of n_1 , n_2 , n_3 and	n₄is(are)		

20. A ball is drawn at random from box I and transferred to box II. If the probability of drawing a red ball from

box I, after this transfer, is $\overline{3}$, then the correct option(s) with the possible values of n₁ and n₂ is(are) (A) n₁ = 4 and n₂ = 6 (B) n₁ = 2 and n₂ = 3 (C) n₁ = 10 and n₂ = 20 (D) n₁ = 3 and n₂ = 6

21. A computer producing factory has only two plants T₁ and T₂. Plant T₁ produces 20% and plant T₂ produces 80% of the total computers produced. 7% of computers produced in the factory turn out to be defective. It is known that

P(computer turns out to be defective given that it is produced in plant T₁)

= 10 P(computer turns out to be defective given that it is produced in Plant T_2),

where P(E) denotes the probability of an event E. A computer produced in the factory is randomly selected and it does not turn out to be defective. Then the probability that it is produced in plant T₂ is

		[JEE (Advanced) 2016, Paper-1, (3, –1)/62]				
36	47	78	75			
(A) 73	(B) ⁷⁹	(C) 93	(D) ⁸³			

Comprehension # 4 (22 and 23)

Football teams T_1 and T_2 have to play two games against each other. It is assumed that the outcomes of the two games are independent. The probabilities of T_1 winning, drawing and losing a game against T_2 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

are $\overline{2}$, $\overline{6}$ and $\overline{3}$, respectively. Each team gets 3 points for a win, 1 point for a draw and 0 point for a loss in a game. Let X and Y denote the total points scored by teams T₁ and T₂, respectively, after two games. [JEE (Advanced) 2016, Paper-2, (3, -1)/62]

22.	P (X > Y) is								
	1	5	1	7					
	(A) 4	(B) 12	(C) 2	(D) 12					
23.	P(X = Y) is								
	11	1	13	1					
	(A) 36	(B) ³	(C) 36	(D) 2					
			<u>1</u> <u>1</u>	2					
24.	Let X and Y be tw	vo events such that $P(X) =$	³ , $P(X Y) = 2$ and $P(X Y) = 2$	(Y X) = 5 Then					
		[JEE(Advanced) 2017, Paper-1,(4, –2)/61] (A)							
	4	1	2) -	1				
	P(Y) = 15	(B) $P(X' Y) = 2$	(C) $P(X \cup Y) = 5$	(D) P(X ∩ Y) :	_ 5				
25.	Three randomly o	hosen nonnegative intege	rs x, y and z are found	d to satisfy the equation	y = 10				
	Then the probabi	lity that z is even, is	[JEE(Advanced)2017,Paper-2,(3,–1)/61]						
	1	36	6	5					
	(Δ) $\overline{2}$	(B) 55	$(C) \overline{11}$	(D) <u>11</u>					

	An	ISW	ers										
)		EXERC	SISE #	1					
Secti	on (A)	:											
A-1. A-8.	(1) (1)	A-2. A-9.	(1) (2)	A-3. A-10.	(3) (1)	A-4. A-11.	(4) (4)	A-5. A-12.	(4) (4)	A-6. A-13.	(1) (3)	A-7. A-14.	(4) (4)
A-15.	(4)	A-16.	(3)	A-17.	(1)								
Secti	on (B)	:											
B-1.	(1)	B-2.	(2)	B-3.	(2)	B-4.	(1)						
Secti	on (C)	:	()		(4)	• •			(2)	• •		. -	
C-1.	(3)	C-2.	(1)	C-3.	(1)	C-4.	(3)	C-5.	(3)	C-6.	(3)	C-7.	(3)
C-8.	(4)	C-9.	(4)	C-10.	(2)	C-11.	(4)	C-12.	(1)	6-13.	(3)	C-14 .	(1)
Secti D-1.	(3)	: D-2.	(3)	D-3.	(4)	D-4.	(4)	D-5.	(1)	D-6.	(2)	D-7.	(1)
D-8.	(1)	D-9.	(2)	- •	(•)		(.)	- •	(.)	- •	(-)		(-)
Secti	on (E)												
E-1.	(2)	E-2.	(1)	E-3.	(1)	E-4.	(3)	E-5.	(4)	E-6.	(4)	E-7.	(3)
E-8.	(2)												
						EXERC	SISE #	2					
						PAF	RT - I						
1.	(3)	2.	(4)	3.	(3)	4.	(1)	5.	(2)	6.	(2)	7.	(3)
8. 15	(2)	9. 16	(2)	10. 17	(3)	11. 18	(1)	12. 19	(4) (3)	13. 20	(4) (4)	14. 21	(1)
22.	(1)	10	(1)		(0)	10.	(')	15.	(0)	20.	(+)	21.	(2)
•						PAR	RT - II						
Secti	on (A)	:					<i></i>						
A-1.	(3)	A-2.	(1)	A-3.	(1)	A-4.	(1)						
Secti	оп (Б)												
Secti	$\frac{(4)}{(4)}$												
Secu		•	• •	(4.0.0)	,	• •	(1.0.1		• •	(1.0)		. -	
C-1.	(2,3)		C-2.	(1,2,3)	C-3.	(1,2,4)	C-4.	(1,3)		C-5.	(3,4)
						EXERC	SISE #	3					
						PAF	RL - I						
1.	(1)	2.	(2)	3.	(1)	4.	(2)	5.	(1)	6.	(2)	7.	(4)
8.	(1)	9.	(1)	10.	(3)	11.	(2)	12.	(4)	13.	(2)	14.	(3)
15.	(4)	16. 	(2)	17.	(2)	18. 	(3)	19.	(4)	20.	(4)	21.	(2)
22.	(1)	23.	(3)	24.	(2)	25.	(4)	26.	(2)	27.	(3)	28.	(1)
29.	(1)	30.	(3)	31.	(2)	32.	(1)	33.	(1)				
						PAR	RT - II						
1.	(A)	2.	(D)	3.	(D)	4.	(C)	5.	(C)	6.	(D)	7.	(A)
ŏ. 45	(B)	9. 16	(D)	10.	(C)	11. 10	(C)	12*.	(A,D)	13*. 20	(A,B)	14. 24	(A)
15. 22	(A) (B)	16. 22	(A) (C)	17. 24	(U) (A D)	18. 25	(A) (C)	19.	(A,B)	2 0.	(C,D)	Z 1.	(C)
<i>22</i> .	(D)	23.	(\mathbf{U})	24.	(A,D)	25.	(\mathbf{C})						