

JEE MAIN PROBABILITY (CLASS 12) — PYQS

Max. Marks: 76
Questions: 19

Section A (MCQ) — 18 questions

- Q.1** A candidate has to go to the examination centre to appear in an examination. The candidate uses only one means of transportation for the entire distance out of bus, scooter and car. The probabilities of the candidate going by bus, scooter and car, respectively, are $\frac{2}{5}$, $\frac{1}{5}$ and $\frac{2}{5}$. The probabilities that the candidate reaches late at the examination centre are $\frac{1}{5}$, $\frac{1}{3}$ and $\frac{1}{4}$ if the candidate uses bus, scooter and car, respectively. Given that the candidate reached late at the examination centre, the probability that the candidate travelled by bus is :

[JEE Main 2026 (Online) 8th April Evening Shift]

- (1) $\frac{11}{37}$ (2) $\frac{12}{37}$ (3) $\frac{13}{37}$ (4) $\frac{14}{37}$

Scan or tap for the full solution



- Q.2** A bag contains $(N + 1)$ coins – N fair coins, and one coin with 'Head' on both sides. A coin is selected at random and tossed. If the probability of getting 'Head' is $\frac{9}{16}$, then N is equal to :

[JEE Main 2026 (Online) 6th April Morning Shift]

- (1) 5 (2) 7 (3) 8 (4) 9

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- Q.3** A letter is known to have arrived by post either from KANPUR or from ANANTPUR. On the envelope just two consecutive letters AN are visible. The probability, that the letter came from ANANTPUR, is:

[JEE Main 2026 (Online) 5th April Morning Shift]

- (1) $\frac{7}{10}$ (2) $\frac{10}{17}$ (3) $\frac{12}{19}$ (4) $\frac{7}{19}$

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- Q.4** Let a random variable X take values 0, 1, 2, 3 with $P(X = 0) = P(X = 1) = p$, $P(X = 2) = P(X = 3)$ and $E(X^2) = 2E(X)$. Then the value of $8p - 1$ is :

[JEE Main 2025 (Online) 7th April Evening Shift]

- (1) 2 (2) 0 (3) 3 (4) 1

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- Q.5** The probabilities that players A and B of a team are selected for the captaincy for a tournament are 0.6 and 0.4, respectively. If A is selected the captain, the probability that the team wins the tournament is 0.8 and if B is selected the captain, the probability that the team wins the tournament is 0.7. Then the probability, that the team wins the tournament, is :

[JEE Main 2026 (Online) 5th April Evening Shift]

- (1) 0.74 (2) 0.76 (3) 0.72 (4) 0.78

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- Q.6** A bag contains 10 balls out of which k are red and $(10 - k)$ are black, where $0 \leq k \leq 10$. If three balls are drawn at random without replacement and all of them are found to be black, then the probability that the bag contains 1 red and 9 black balls is:

[JEE Main 2026 (Online) 28th January Morning Shift]

- (1) $\frac{7}{110}$ (2) $\frac{7}{11}$ (3) $\frac{7}{55}$ (4) $\frac{14}{55}$

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- Q.7** The probability distribution of a random variable X is given below :

X	$4k$	$\frac{30}{7}k$	$\frac{32}{7}k$	$\frac{34}{7}k$	$\frac{36}{7}k$	$\frac{38}{7}k$	$\frac{40}{7}k$	$6k$
$P(X)$	$\frac{2}{15}$	$\frac{1}{15}$	$\frac{2}{15}$	$\frac{1}{5}$	$\frac{1}{15}$	$\frac{2}{15}$	$\frac{1}{5}$	$\frac{1}{15}$

If $E(X) = \frac{263}{15}$, then $P(X < 20)$ is equal to :

[JEE Main 2026 (Online) 28th January Evening Shift]

- (1) $\frac{3}{5}$ (2) $\frac{14}{15}$ (3) $\frac{8}{15}$ (4) $\frac{11}{15}$

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- Q.8** From a lot containing 10 defective and 90 non-defective bulbs, 8 bulbs are selected one by one with replacement. Then the probability of getting at least 7 defective bulbs is

[JEE Main 2026 (Online) 24th January Morning Shift]

- (1) $\frac{73}{10^8}$ (2) $\frac{67}{10^8}$ (3) $\frac{7}{10^7}$ (4) $\frac{81}{10^8}$

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- Q.9** Bag A contains 9 white and 8 black balls, while bag B contains 6 white and 4 black balls. One ball is randomly picked up from the bag B and mixed up with the balls in the bag A. Then a ball is randomly drawn from the bag A. If the probability, that the ball drawn is white, is $\frac{p}{q}$, $\gcd(p, q) = 1$, then $p + q$ is equal to

[JEE Main 2026 (Online) 23rd January Evening Shift]

- (1) 24 (2) 22 (3) 23 (4) 21

Scan or tap for the full solution



- Q.10** If a random variable x has the probability distribution

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

then $P(3 < x \leq 6)$ is equal to

[JEE Main 2026 (Online) 22nd January Morning Shift]

- (1) 0.34 (2) 0.64 (3) 0.22 (4) 0.33

Scan or tap for the full solution



- Q.11** A random variable X takes values 0, 1, 2, 3 with probabilities $\frac{2a+1}{30}$, $\frac{8a-1}{30}$, $\frac{4a+1}{30}$, b respectively, where $a, b \in \mathbb{R}$.

Let μ and σ respectively be the mean and standard deviation of X such that $\sigma^2 + \mu^2 = 2$.Then $\frac{a}{b}$ is equal to:

[JEE Main 2026 (Online) 21st January Evening Shift]

- (1) 12 (2) 60 (3) 30 (4) 3

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- Q.12** If A and B are two events such that $P(A) = 0.7$, $P(B) = 0.4$ and $P(A \cap \bar{B}) = 0.5$, where $\bar{B}$ denotes the complement of B , then $P(B | (A \cup \bar{B}))$ is equal to

[JEE Main 2025 (Online) 8th April Evening Shift]

- (1)
- $\frac{1}{3}$
- (2)
- $\frac{1}{2}$
- (3)
- $\frac{1}{4}$
- (4)
- $\frac{1}{6}$

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- Q.13** A bag contains 19 unbiased coins and one coin with head on both sides. One coin drawn at random is tossed and head turns up. If the probability that the drawn coin was unbiased, is $\frac{m}{n}$, $\gcd(m, n) = 1$, then $n^2 - m^2$ is equal to:

[JEE Main 2025 (Online) 7th April Evening Shift]

- (1) 64 (2) 80 (3) 60 (4) 72

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- Q.14** A box contains 10 pens of which 3 are defective. A sample of 2 pens is drawn at random and let X denote the number of defective pens. Then the variance of X is

[JEE Main 2025 (Online) 4th April Morning Shift]

- (1)
- $\frac{11}{15}$
- (2)
- $\frac{2}{15}$
- (3)
- $\frac{3}{5}$
- (4)
- $\frac{28}{75}$

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- Q.15** If the probability that the random variable X takes the value x is given by $P(X = x) = k(x + 1)3^{-x}$, $x = 0, 1, 2, 3, \dots$, where k is a constant, then $P(X \geq 3)$ is equal to

[JEE Main 2025 (Online) 3rd April Evening Shift]

- (1)
- $\frac{1}{9}$
- (2)
- $\frac{8}{27}$
- (3)
- $\frac{7}{27}$
- (4)
- $\frac{4}{9}$

Scan or tap for the full solution



- Q.16** Given three identical bags each containing 10 balls, whose colours are as follows:

	Red	Blue	Green
Bag I	3	2	5
Bag II	4	3	3
Bag III	5	1	4

A person chooses a bag at random and takes out a ball. If the ball is Red, the probability that it is from bag I is p and if the ball is Green, the probabilitythat it is from bag III is q , then the value of $\left(\frac{1}{p} + \frac{1}{q}\right)$

is:

[JEE Main 2025 (Online) 2nd April Evening Shift]

- (1) 6 (2) 9 (3) 7 (4) 8

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- Q.17** Three defective oranges are accidentally mixed with seven good ones and on looking at them, it is not possible to differentiate between them. Two oranges are drawn at random from the lot. If x denotes the number of defective oranges, then the variance of x is

[JEE Main 2025 (Online) 28th January Morning Shift]

- (1) 26/75 (2) 14/25 (3) 18/25 (4) 28/75

Scan or tap for the full solution



- Q.18** Bag B_1 contains 6 white and 4 blue balls, Bag B_2 contains 4 white and 6 blue balls, and Bag B_3 contains 5 white and 5 blue balls. One of the bags is selected at random and a ball is drawn from it. If the ball is white, then the probability that the ball is drawn from Bag B_2 is:

[JEE Main 2025 (Online) 28th January Evening Shift]

- (1) $\frac{2}{5}$ (2) $\frac{4}{15}$ (3) $\frac{1}{3}$ (4) $\frac{2}{3}$

Scan or tap for the
full solution



Section B (Numerical) — 1 question

- Q.19** A card from a pack of 52 cards is lost. From the remaining 51 cards, n cards are drawn and are found to be spades. If the probability of the lost card to be a spade is $\frac{11}{50}$, then n is equal to _____.

[JEE Main 2025 (Online) 4th April Evening Shift]

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full solution



ANSWER KEY

Section A (MCQ) — 18 questions

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	2	2	1	2	4	4	1	3	4	2
Ques.	12	13	14	15	16	17	18				
Ans.	3	2	4	1	3	4	2				

Section B (Numerical) — 1 question

Ques.	19										
Ans.	2										