PROBABILITY

Assignment 4 Practice *by* O.P. GUPTA • M. +91-9650350480

Q01. If A and B are two events such that $P(A) = 0.2$, $P(B) = 0.4$ and $P(A \cup B) = 0.5$, then value of $P(A \mid B)$ is

(a) 0.1 (b) 0.25 (c) 0.5 (d) 0.08

Q02. An urn contains 6 balls of which two are red and four are black. Two balls are drawn at random. Probability that they are of the different colours is

(a) $\frac{2}{5}$ (b) $\frac{1}{15}$ (c) $\frac{8}{15}$ (d) $\frac{4}{15}$

Q03. A card is picked at random from a pack of 52 playing cards. Given that the picked card is a queen, the probability of this card to be a card of spade is

(a) $\frac{1}{3}$ (b) $\frac{4}{13}$ (c) $\frac{1}{4}$ (d) $\frac{1}{2}$

Q04. A die is thrown once. Let A be the event that the number obtained is greater than 3. Let B be the event that the number obtained is less than 5. Then, $P(A \cup B)$ is

(a) $\frac{2}{5}$ (b) $\frac{3}{5}$ (c) 0 (d) 1

Q05. A number is chosen randomly from numbers 1 to 60. The probability that the chosen number is a multiple of 2 or 5, is

(a) $\frac{2}{5}$ (b) $\frac{3}{5}$ (c) $\frac{7}{10}$ (d) $\frac{9}{10}$

Q06. From the set {1, 2, 3, 4, 5}, two numbers a and b ($a \neq b$) are chosen at random. The probability that $\frac{a}{b}$ is an integer is

(a) $\frac{1}{3}$ (b) $\frac{1}{4}$ (c) $\frac{1}{2}$ (d) $\frac{3}{5}$

Q07. A bag contains 3 white, 4 black and 2 red balls. If 2 balls are drawn at random (without replacement), then the probability that both the balls are white is

(a) $\frac{1}{18}$ (b) $\frac{1}{36}$ (c) $\frac{1}{12}$ (d) $\frac{1}{24}$

Q08. Three dice are thrown simultaneously. The probability of obtaining a total score of 5 is

(a) $\frac{5}{216}$ (b) $\frac{1}{6}$ (c) $\frac{1}{36}$ (d) $\frac{1}{49}$

Q09. A bag contains 3 black, 4 red and 2 green balls. If three balls are drawn simultaneously at random, then the probability that the balls are of different colours is

(a) $\frac{2}{7}$ (b) $\frac{1}{7}$ (c) $\frac{6}{7}$ (d) $\frac{5}{7}$

Q10. An unbiased coin is tossed 4 times. Then the probability of getting at least one head, is

(a) $\frac{1}{16}$ (b) $\frac{15}{16}$ (c) $\frac{3}{16}$ (d) $\frac{13}{16}$

Q11. A problem is given to three students whose probabilities of solving it are $\frac{1}{3}, \frac{1}{4}$ and $\frac{1}{6}$ respectively. If the events of solving the problem are independent, then the probability that at least one of them solves it, is given by

(a) $\frac{5}{12}$ (b) $\frac{1}{12}$ (c) $\frac{7}{12}$ (d) $\frac{11}{12}$

Q12. If A and B are two independent events with $P(A) = \frac{1}{3}$ and $P(B) = \frac{1}{4}$, then $P(B' \mid A)$ is equal to

(a) $\frac{1}{4}$ (b) $\frac{1}{3}$ (c) $\frac{3}{4}$ (d) 1

Q13. Two cards are drawn at random and one-by-one without replacement from a well-shuffled pack of 52 playing cards. Then the probability that one card is red and the other is black, is

(a) $\frac{25}{51}$ (b) $\frac{32}{51}$ (c) $\frac{19}{51}$ (d) $\frac{26}{51}$

Q14. The probability of solving a specific question independently by A and B are $\frac{1}{3}$ and $\frac{1}{5}$ respectively. If both try to solve the question independently, the probability that the question is solved, is

(a) $\frac{7}{15}$ (b) $\frac{8}{15}$ (c) $\frac{2}{15}$ (d) $\frac{14}{15}$

Q15. From a pack of 52 cards, 3 cards are drawn at random (without replacement). The probability that they are two red cards and one black card, is

(a) $\frac{21}{34}$ (b) $\frac{13}{34}$ (c) $\frac{1}{34}$ (d) $\frac{33}{34}$

Q16. A random variable X has the probability distribution :

X	0	1	2	3	4
P(X)	0	K	4K	3K	2K

Find the value of K and $P(X \le 2)$.

Q17. A speaks truth in 80% cases and B speaks truth in 90% cases. In what percentage of cases are they likely to agree with each other in stating the same fact?

Q18. The probability of finding a green signal on a busy crossing X is 30%. What is the probability of finding a green signal on X on two consecutive days out of three?

Q19. The probability that it will rain on any particular day is 50%. Find the probability that it rains only on first 4 days of the week.

Q20. A coin is tossed once. If head comes up, a die is thrown, but if tail comes up, the coin is tossed again. Find the probability of obtaining head and number 6.

Q21. If A and B are two independent events and $P(A) = \frac{1}{3}$ and $P(B) = \frac{1}{2}$, find $P(\bar{A} \mid \bar{B})$.

Q22. Given two independent events A and B such that $P(A) = 0.3$ and $P(B) = 0.6$, find $P(A' \cap B')$.

Q23. If A and B are two events such that $P(A) = 0.4$, $P(B) = 0.3$ and $P(A \cup B) = 0.6$, then find $P(B' \cap A)$.

Q24. Find $\left[P(B \mid A) + P(A \mid B)\right]$, if $P(A) = \frac{3}{10}$, $P(B) = \frac{2}{5}$ and $P(A \cup B) = \frac{3}{5}$.

Q25. Three distinct numbers are chosen randomly from the first 50 natural numbers.

Find the probability that all the three numbers are divisible by both 2 and 3.

Q26. A black die and a red die are rolled together. Find the conditional probability of obtaining a sum greater than 9 given that the black die resulted in a 5.

Q27. A fair dice is thrown two times. Find the probability distribution of the number of sixes. Also determine the mean of the number of sixes.

Q28. A and B throw a pair of dice alternatively till one of them gets the sum of the numbers as multiples of 6 and wins the game. If A starts first, find the probability of B winning the game.

Q29. A discrete random variable X has the following probability distribution :

X	0	1	2	3	4	5
P(X)	$4C^2$	$3C^2$	$2C^2$	C^2	C	2C

(a) Find the value of C.
(b) Find the mean of the distribution.

Q30. A card from a pack of 52 cards is lost. From the remaining cards of the pack, two cards are drawn randomly one-by-one without replacement and are found to be both kings. Find the probability of the lost card being a king.

Q31. Two numbers are selected at random (without replacement) from first 7 natural numbers. If X denotes the smallest of the two numbers obtained, find the probability distribution of X.

Also find mean of the distribution.

Q32. There are three coins, one is a two headed coin (having head on both the faces), another is a biased coin that comes up heads 75% of the time and the third is an unbiased coin. One of the three coins is chosen at random and tossed. If it shows head, what is probability that it was the two headed coin?

Q33. Three rotten apples are mixed with seven fresh apples. Find the probability distribution of the number of rotten apples, if three apples are drawn one by one with replacement. Find the mean of the number of rotten apples.

Q34. In a shop X, 30 tins of ghee of type A and 40 tins of ghee of type B which look alike, are kept for sale. While n a shop Y, similar 50 tins of ghee of type A and 60 tins of ghee of type B are there. One tin of ghee is purchased from one of the randomly selected shop and is found to be of type B. Find the probability that it is purchased from shop Y.

Q35. A coin is biased so that the head is three times as likely to occur as tail. If the coin is tossed twice, find the probability distribution of number of tails. Hence find the mean of the number of tails.

Q36. Suppose that 5 men out of 100 and 25 women out of 1000 are good orators. Assuming that there are equal number of men and women, find the probability of choosing a good orator.

Q37. A bag contains two coins, one biased and the other unbiased. When tossed, the biased coin has a 60% chance of showing heads. One of the coins is selected at random and on tossing it shows tail. What is the probability it was an unbiased coin?

Q38. A purse contains 3 silver and 6 copper coins and a second purse contains 4 silver and 3 copper coins. If a coin is drawn at random from one of the two purses, find the probability that it is a silver coin.

Q39. Find the probability distribution of the random variable X, which denotes the number of doublets in four throws of a pair of dice. Hence, find the mean of the number of doublets (X).

Q40. A bag contains 19 tickets, numbered 1 to 19. A ticket is drawn at random and then another ticket is drawn without replacing the first one in the bag. Find the probability distribution of the number of even numbers on the ticket.

Q41. Find the probability distribution of the number of successes in two tosses of a die, when a success is defined as "number greater than 5".

Q42. The probability distribution of a random variable X, where k is a constant, is given below :

$$P(X=x)=\begin{cases}0.1, \text{ if } x=0\\ kx^2, \text{ if } x=1\\ kx, \text{ if } x=2 \text{ or } 3\\ 0, \text{ otherwise}\end{cases}$$

Determine

(a) the value of k
(b) $P(X \le 2)$
(c) Mean of the variable X.

Q43. There are two bags, I and II. Bag I contains 3 red and 5 black balls and Bag II contains 4 red and 3 black balls. One ball is transferred randomly from Bag I to Bag II and then a ball is drawn

randomly from Bag II. If the ball so drawn is found to be black in colour, then find the probability that the transferred ball is also black.

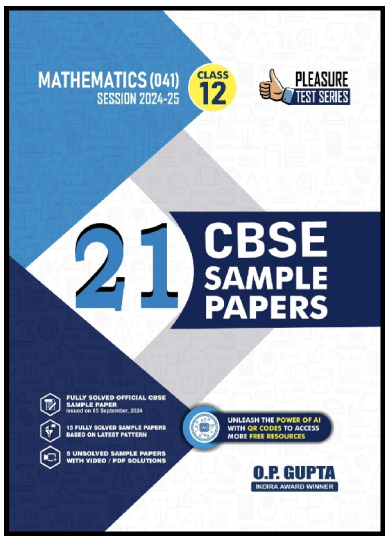
Q44. An urn contains 5 red, 2 white and 3 black balls. Three balls are drawn, one-by-one, at random without replacement. Find the probability distribution of the number of white balls. Also, find the mean of the number of white balls drawn.

Q45. A bag contains 5 red and 4 black balls, a second bag contains 3 red and 6 black balls. One of the two bags is selected at random and two balls are drawn at random (without replacement), both of which are found to be red. Find the probability that these two balls are drawn from the second bag.

ⓘ **You may Share this PDF File with other Students and Teachers.**

ⓘ **You may add our WhatsApp no. 9650350480 to your groups to get Regular updates.**

#WE-ARE-ON-MISSION



CBSE 21 SAMPLE PAPERS
For CBSE 2024-25 Exams ▪ Class 12 Maths (041)
Pleasure Test Series By O.P. Gupta
- ✪ **Multiple Choices Questions**
- ✪ **Assertion-Reason (A-R) Questions**
- ✪ **Subjective type Questions (2 Markers, 3 Markers & 5 Markers)**
- ✪ **CASE STUDY QUESTIONS (As per Latest format for 2024-25)**
- ✪ **H.O.T.S. Questions**
- ✪ **Detailed Solutions** of 16 Sample Papers
- ✪ **ANSWERS** of 5 Unsolved Sample Papers (with Video Solutions)

MANY DIRECT QUESTIONS HAVE BEEN DIRECTLY TAKEN IN THE RECENT CBSE EXAMS.. #We-Are-On-Mission

For order related queries, please contact by WhatsApp @ +91 9650350480 (only message)

✪ **Buy on Amazon & Flipkart**

Apart from being a content developer and author, Mr O.P. GUPTA enjoys Math Learning with the Students of XI & XII @ Think Academy.
Add. 1st Floor, Opp. HP Petrol Pump, Thana Road, Dhansa Bus Stand Metro Station, Najafgarh, New Delhi

💻 Detailed **Solutions** will be uploaded on the YouTube Channel -- keep Subscribed
YouTube.com/MathematiciaByOPGupta

theopgupta.com
THE OPGUPTA

MATHEMATICIA BY O.P. GUPTA

...a name you can bank upon!

Feel Safe to **Share this Document** with other math scholars

CLICK NOW TO Download

or, just type - theopgupta.com

FREE PDF TESTS AND ASSIGNMENTS OF THE CLASSES XII, XI & X

To get FREE PDF Materials, join WhatsApp Teachers Group by Clicking on the Logo

Click on the Book cover to buy!

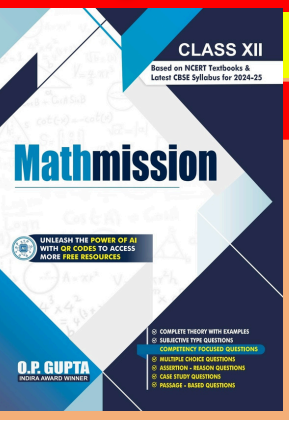
If you are a Student, then you may join our Students Group

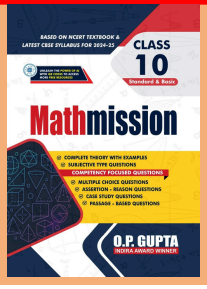
CLICK HERE FOR CLASSES IX & X

CLICK HERE FOR CLASSES XI & XII

You can add our WhatsApp no. +919650350480 to your Groups also

Many Direct Questions from our Books have been asked in the recent CBSE Exams





MATHMISSION FOR XII, XI & X

2024-25 Edition

/theopgupta /theopgupta /theopgupta /@theopgupta

Buy our books on amazon Flipkart

For Bulk Orders of our Books at Discounted Price, contact on +91-9650350480

MOST REPUTED BOOKS OF XII, XI & X

MATHMISSION
REFRESHER BOOKS

Our all-inclusive Refresher-Guide feature

- Theory
- Examples
- Subjective Questions
- Multiple Choice Questions
- Assertion Reason Questions
- Case Study Questions
- Answers

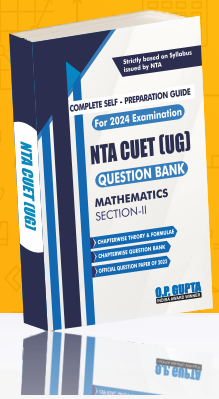
SOLUTIONS OF MATHMISSION

MOST TRUSTED SAMPLE PAPERS

Our popular Sample Papers Guide feature

- Official CBSE Sample Papers with Solutions
- Plenty of Fully Solved Sample Papers
- Unsolved Sample Papers for Practice

NTA CUET (UG)
Mathematics Question Bank



Buy our books Online

amazon

Flipkart

Scan QR-Code to buy our books on Amazon

GET BULK-ORDER @ THE DISCOUNTED PRICES FOR SCHOOLS, COACHING & TUITION INSTITUTES.
For Details, Contact On

WhatsApp @ +919650350480