Mathematics — Ganita Manjari

Chapter 7 Test 8

The Mathematics of Maybe: Introduction to Probability

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. No calculators. Give exact answers unless an approximation is requested.
3. Use the stated fairness and replacement conditions in each question.

SECTION A

(5 questions × 1 mark = 5 marks)

1. Which event is most likely if its probability is one of the following?

(A) $\frac{2}{5}$ (B) 0.45

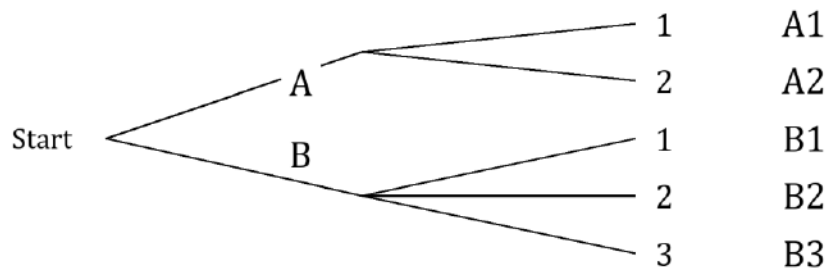
(C) 48% (D) $\frac{1}{2}$

2. A fair coin is tossed and a card numbered 1 to 4 is drawn independently. The number of combined outcomes is:

(A) 6 (B) 8

(C) 4 (D) 2

3. The tree lists the available choices. How many complete outcomes are there?



(A) 5 (B) 6

(C) 3 (D) 2

4. A fair coin is best described as one for which:

(A) Heads and tails alternate (B) Five heads in every ten tosses

(C) Both sides have equal chances (D) The next side is predictable

5. A bag contains only red (R) and yellow (Y) counters. Which expression equals $P(Y)$?

(A) $P(R) + 1$ (B) $P(R) - 1$

(C) $1/P(R)$ (D) $1 - P(R)$

SECTION B

(4 questions × 2 marks = 8 marks)

6. The table records 100 tyres. Find the probability that a uniformly selected recorded tyre lasted more than 9000 km.

Distance d (km)	Count
$d \le 4000$	5
$4000 < d \le 9000$	20
$9000 < d \le 14000$	35
$d > 14000$	40

7. Two fair coins are tossed independently and only the number of heads is recorded. Give the three possible counts and their probabilities.

8. Classify probabilities 0, 0.2, 0.5, 0.9 and 1 as impossible, less likely than not, even chance, more likely than not or certain.

9. An event occurred twice as often as it did not occur in 90 trials. Find its experimental probability.

SECTION C

(3 questions × 3 marks = 9 marks)

10. A four-digit number is formed uniformly using 1, 2, 3 and 4 once each. How many numbers are possible? How many are even? Find the probability of an even number.

11. Two fair coins are tossed independently. A pupil counts only HT and TH for "at least one tail". Identify the missing outcome, then give the correct probability and explain "at least".

12. A school has 200 junior and 600 senior pupils. A proportional sample of 80 is planned. Find the number from each group and explain one advantage over taking all 80 from juniors.

SECTION D

(1 application question × 3 marks = 3 marks)

13. A fair coin selects box A on heads or box B on tails. A contains 1 red and 3 blue balls; B contains 3 red and 1 blue. A ball is chosen uniformly from the selected box. Find the probability of red by considering both routes.