CLASS XI – MATHEMATICS (041)
CHAPTER 14 : PROBABILITY
PRACTICE PAPER (SESSION 2026–27)

Maximum Marks: 40 **Time Allowed: 1½ Hours**

General Instructions:

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 23 questions. All questions are compulsory.
2. This question paper is divided into five Sections – A, B, C, D and E.
3. In Section A, Questions 1 to 12 are Multiple Choice Questions (MCQs) and Questions 13 and 14 are Assertion–Reason based questions of 1 mark each.
4. In Section B, Questions 15 to 18 are Very Short Answer (VSA) type questions, carrying 2 marks each.
5. In Section C, Questions 19 to 21 are Short Answer (SA) type questions, carrying 3 marks each.
6. In Section D, Question 22 is a Long Answer (LA) type question, carrying 5 marks.
7. In Section E, Question 23 is a case study based question, carrying 4 marks.
8. There is no overall choice. However, an internal choice has been provided in 2 questions of Section B (Q17, Q18), 2 questions of Section C (Q20, Q21), in Q22 of Section D and in one sub-part of Q23 of Section E.
9. Draw neat and clean figures wherever required. Use of calculators is not allowed.

SECTION – A **(14 × 1 = 14)**

This section comprises of 12 multiple choice questions (Q1–Q12) and 2 assertion–reason based questions (Q13–Q14) of 1 mark each.

No.	Questions	Marks
Q1.	The spinner in Fig. 1 has eight equal sectors numbered 1 to 8. It is spun once and all outcomes are equally likely. The probability that the pointer stops on a number which is a factor of 8 is	**1**

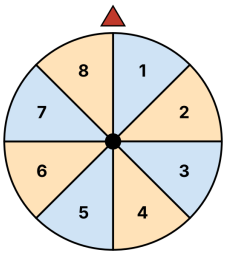


Fig. 1

(A) 1/4 (B) 3/8

(C) 1/2 (D) 5/8

Q2. Two dice are thrown. Fig. 2 shows the sample space as a 6 × 6 grid, in which the shaded cells represent an event E. The probability of E is **1**

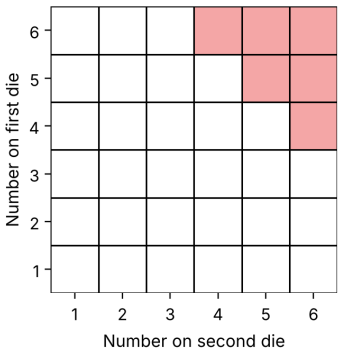


Fig. 2

(A) 1/12 (B) 1/9

(C) 5/36 (D) 1/6

Q3. If the probability of an event A is 5/12, then the probability of the event 'not A' is **1**

(A) 7/12 (B) 5/12

(C) 1/12 (D) 12/5

Q4. Which of the following can be a valid assignment of probabilities to the outcomes ω_1, ω_2, ω_3, ω_4 of a sample space? **1**

(A) 0.3, 0.3, 0.3, 0.3 (B) 0.1, 0.2, 0.3, 0.4

(C) 0.5, 0.3, –0.1, 0.3 (D) 1/2, 1/2, 1/2, –1/2

Q5. If P(A) = 0.5, P(B) = 0.35 and P(A ∩ B) = 0.2, then P(A ∪ B) is **1**

(A) 0.55 (B) 0.85

(C) 0.65 (D) 0.75

Q6. A and B are mutually exclusive events with P(A) = 2/5 and P(B) = 1/3. Then P(A or B) is **1**

(A) 11/15 (B) 1/15

(C) 2/15 (D) 3/8

Q7. One card is drawn at random from a well shuffled deck of 52 cards. The probability that it is a red king is **1**

(A) 1/13 (B) 1/52

(C) 1/2 (D) 1/26

Q8. In Fig. 3, the numbers in the regions of the Venn diagram are the probabilities of the corresponding parts of the sample space S. The value of P(A ∪ B) is **1**

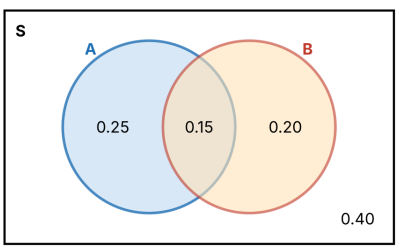


Fig. 3

(A) 0.45 (B) 0.60

(C) 0.55 (D) 0.75

Q9. A committee of 2 persons is chosen at random from 3 men and 2 women. The probability that both are men is **1**

(A) 3/10 (B) 3/5

(C) 1/10 (D) 2/5

Q10. Three coins are tossed once. The probability of getting exactly two tails is **1**

(A) 1/8 (B) 1/2

(C) 7/8 (D) 3/8

Q11. If P(A) = 0.5, P(B) = 0.4 and P(A ∪ B) = 0.7, then P(A ∩ B) is **1**

(A) 0.1 (B) 0.2

(C) 0.3 (D) 0.9

Q12. A letter is chosen at random from the letters of the word 'MATHEMATICS'. The probability that it is a vowel is **1**

(A) 3/11 (B) 5/11

(C) 4/11 (D) 7/11

Assertion–Reason Based Questions

Directions: Question numbers 13 and 14 are Assertion and Reason based questions carrying 1 mark each. Two statements are given, one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer from the options (A), (B), (C) and (D) as given below:
(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).
(C) Assertion (A) is true but Reason (R) is false.
(D) Assertion (A) is false but Reason (R) is true.

Q13. **Assertion (A):** The numbers 0.2, 0.3, 0.4 and 0.5 can be assigned as probabilities to the four outcomes of a sample space. **1**
Reason (R): The sum of the probabilities of all the outcomes of a sample space is 1.

Q14. **Assertion (A):** For any two events A and B, P(A ∪ B) = P(A) + P(B). **1**
Reason (R): For mutually exclusive events A and B, P(A ∪ B) = P(A) + P(B).

SECTION – B (4 × 2 = 8)

This section comprises of 4 very short answer (VSA) type questions of 2 marks each.

Q15. Three coins are tossed once. Fig. 4 shows the sample space S, with the outcomes placed in a Venn diagram for the events A: 'at least two heads' and B: 'the first coin shows a head'. **2**

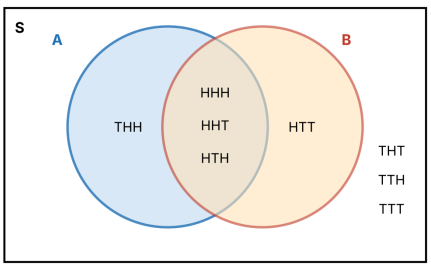


Fig. 4

(i) Write the outcomes in A ∩ B and find P(A ∩ B). **[1]**
(ii) Find P(A ∪ B). **[1]**

Q16. One card is drawn at random from a well shuffled deck of 52 cards. Find the probability that it is a red card or an ace. **2**

Q17. **(A)** If P(A) = 0.6, P(B) = 0.5 and P(A ∩ B) = 0.3, find P(neither A nor B) and P(A but not B). **2**

OR

(B) The probability that Rahul qualifies a test is 0.3 and the probability that Sneha qualifies it is 0.4. The probability that both qualify is 0.1. Find the probability that exactly one of them qualifies.

Q18. **(A)** The probabilities of the five outcomes $\omega_1, \ldots, \omega_5$ of a sample space are 0.1, 0.2, k, 0.25 and 0.15 respectively. Find the value of k and the probability of the event $\{\omega_1, \omega_3\}$. **2**

OR

(B) A bag contains 5 red, 4 blue and 3 green balls. Two balls are drawn at random from the bag. Find the probability that both are red.

SECTION – C (3 × 3 = 9)

This section comprises of 3 short answer (SA) type questions of 3 marks each.

Q19. A bag contains 14 discs of the same shape and size, coloured as shown in Fig. 5. One disc is drawn at random. **3**

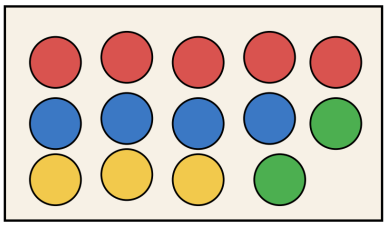


Fig. 5

(i) Find the probability that the disc is red. **[1]**
(ii) Find the probability that the disc is not green. **[1]**
(iii) Find the probability that the disc is either red or yellow. **[1]**

Q20. **(A)** Two dice are thrown. Find the probability that the sum of the numbers is 8 or a multiple of 5 (that is, 5 or 10). **3**

OR

(B) Two cards are drawn at random from a well shuffled deck of 52 cards. Find the probability that both are aces.

Q21. **(A)** A, B and C are three events with P(A) = 0.5, P(B) = 0.4, P(C) = 0.3, P(A ∩ B) = 0.2, P(A ∩ C) = 0.1, P(B ∩ C) = 0.15 and P(A ∩ B ∩ C) = 0.05. Find P(A ∪ B ∪ C). **3**

OR

(B) In a group of 50 persons, 28 take tea, 20 take coffee and 8 take both. A person is selected at random. Find the probability that the person takes (a) neither tea nor coffee, (b) only tea.

SECTION – D (1 × 5 = 5)

This section comprises of 1 long answer (LA) type question of 5 marks.

Q22. **(A)** The probability that student A passes an examination is 0.6 and that student B passes it is 0.5. The probability that both pass is 0.35. Find the probability that (a) neither of them passes, **[2]** (b) at least one of them does not pass, **[1]** (c) only one of them passes. **[2]** **5**

OR

(B) A committee of 3 persons is chosen at random from 5 men and 4 women. Find the probability that the committee has (a) all men, **[2]** (b) exactly two women, **[2]** (c) at least one woman. **[1]**

SECTION – E (1 × 4 = 4)

This section comprises of 1 case study based question of 4 marks with sub-parts (i), (ii), (iii) of marks 1, 1, 2 respectively.

Q23. **Case Study:** In a school of 80 students in Class XI, a survey was conducted on the clubs joined by the students. The numbers of students in the different regions are shown in the Venn diagram in Fig. 6. A student is chosen at random. **4**

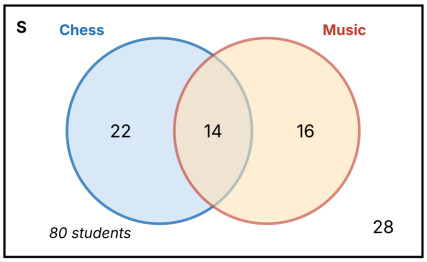


Fig. 6

Based on the given information, answer the following questions:

(i) Find the probability that the student is a member of the Chess club. **[1]**

(ii) Find the probability that the student is a member of at least one of the two clubs. **[1]**

(iii) **(a)** Find the probability that the student is a member of exactly one of the two clubs. **[2]**

OR

(b) Find the probability that the student is in the Music club but not in the Chess club, and the probability that the student is in neither club. **[2]**

— End of Question Paper —