**CLASS 10 MATHEMATICS – PRACTICE TEST**

**Chapters: Statistics and Probability | Time: 1 hour 30 minutes | Maximum Marks: 40**

**General Instructions:**

1. All questions are compulsory.

2. The paper has Sections A, B, C and D with internal choices where applicable.

3. Show clear steps for Statistics (tables, cumulative frequencies) and Probability (sample space and formulas).

4. Use of calculator is not permitted.

**SECTION A – Multiple Choice Questions (10 × 1 = 10)**

1. For the grouped data below, the mean is 20. Find the missing frequency f. [VVI]

Class: 0–10, 10–20, 20–30, 30–40, 40–50; Freq: 5, f, 15, 10, 5

a) 10 b) 15 c) 20 d) 25

2. The empirical relation (for moderately skewed data) is:

a) Mean = Mode − 2×Median b) Mode = 3×Median − 2×Mean

c) Median = 3×Mean − 2×Mode d) Mean = 3×Median − 2×Mode

3. The class mark of the class interval 25–35 is:

a) 25 b) 30 c) 35 d) 60

4. The modal value of the data {4, 6, 6, 7, 8, 8, 8, 9} is:

a) 6 b) 7 c) 8 d) 9

5. The median of the data 6, 8, 10, 12, 14, 16, 18 is:

a) 10 b) 12 c) 14 d) 16

6. A card is drawn at random from a well-shuffled deck of 52 cards. The probability of drawing a red king is: [PYQ (CBSE 2013)]

a) 1/52 b) 1/26 c) 1/13 d) 1/4

7. If P(E) is the probability of an event E, then P(Ē) equals:

a) 1 + P(E) b) 1 − P(E) c) P(E) − 1 d) P(E)

8. Two fair dice are thrown simultaneously. The probability that the sum is 7 equals: [PYQ (CBSE 2011)]

a) 1/36 b) 1/18 c) 1/12 d) 1/6

9. Two coins are tossed together. The probability of getting at least one head is:

a) 1/4 b) 1/2 c) 3/4 d) 1

10. From a deck of 52 cards, the probability of drawing a spade is:

a) 1/4 b) 1/13 c) 3/13 d) 1/2

**SECTION B – Short Answer I (4 × 2 = 8)**

11. Find the median class for the following distribution: [PYQ (CBSE 2019)]

Class (0–10, 10–20, 20–30, 30–40, 40–50, 50–60); Frequency (4, 6, 8, 10, 12, 10).

12. A bag contains 15 white and some black balls. If the probability of drawing a black ball is thrice that of drawing a white ball, find the number of black balls. [VVI]

13. In a single draw from a well-shuffled deck, find the probability of getting a red card or a king. Give the answer in simplest form.

14. The weekly pocket money (₹) of 7 students is: 20, 25, 25, 30, 35, 35, 40. Find the mean and the mode.

**SECTION C – Short Answer II (4 × 3 = 12)**

15. Using step-deviation, find the mean of the following data. [VVI]

Class (0–10, 10–20, 20–30, 30–40, 40–50); Frequency (5, 8, 15, 10, 7).

16. Convert the following distribution to a “more than type” cumulative frequency distribution and write its median class. [PYQ (CBSE 2010)]

Class (40–45, 45–50, 50–55, 55–60, 60–65, 65–70); Frequency (4, 6, 16, 20, 30, 24).

17. Two fair dice are thrown once. Find the probability that the sum is a prime number. [PYQ (CBSE 2015)]

18. From a pack of 52 cards, find the probability that a card drawn is neither an ace nor a face card. State total favourable outcomes.

**SECTION D – Long Answer (2 × 5 = 10)**

19. The distribution shows daily pocket allowance (₹) of children. The mean is ₹18. Find the missing frequency f. [VVI, PYQ (CBSE 2012)]

Class (11–13, 13–15, 15–17, 17–19, 19–21, 21–23, 23–25)

Frequency (7, 6, 9, 13, f, 5, 4). Also state the modal class.

20. A bag contains 5 red, 7 blue and 8 green balls. Two balls are drawn at random without replacement. Find: (i) both are blue, (ii) both are of the same colour, (iii) at least one is green. [Application-based, PYQ (CBSE 2020)]

OR

From a deck of 52 cards, two cards are drawn without replacement. Find the probability that both are face cards. [Application-based]

Note: PYQ tags indicate year(s) when a similar question type appeared in CBSE papers. Show steps for full credit.