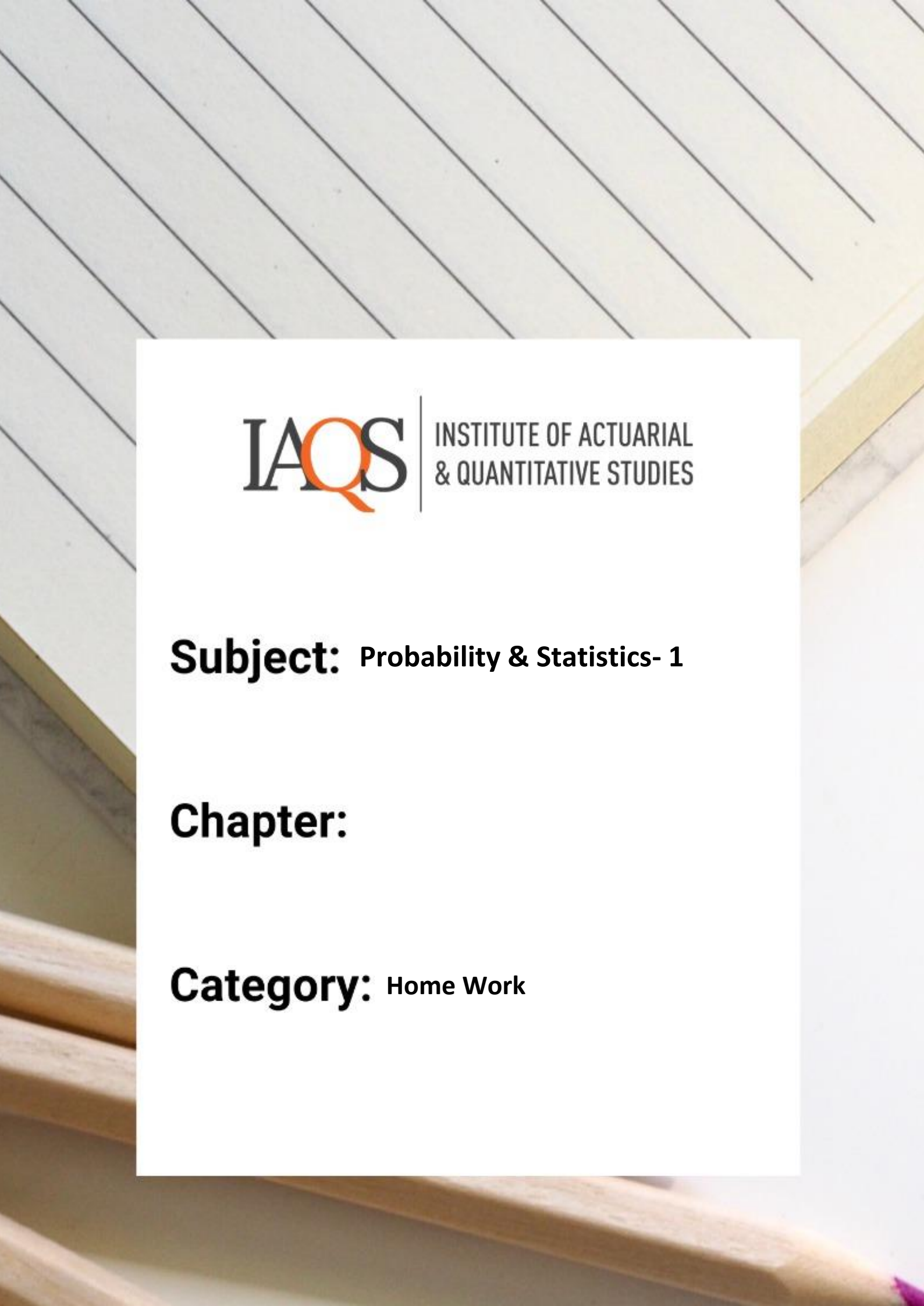

Subject: Probability & Statistics- 1

Chapter:

Category: Home Work

1. Two fair dices are thrown. Given that the sum of the dice is less than or equal to 4, find the probability that only one dice shows two.

   (a) $\frac{1}{4}$ (b) $\frac{1}{2}$

   (c) $\frac{2}{3}$ (d) $\frac{1}{3}$

2. *A* can hit the target 3 times in 6 shots, *B* 2 times in 6 shots and *C* 4 times in 6 shots. They fire a volley. What is the probability that at least 2 shots hit?

   (a) $\frac{1}{2}$ (b) $\frac{1}{3}$

   (c) $\frac{2}{3}$ (d) $\frac{3}{4}$

3. There are two bags, one of them contains 5 red and 7 white balls and the other 3 red and 12 white balls, and a ball is to be drawn from one or the other of the two bags. Find the chance of drawing a red ball.

   (a) $\frac{37}{120}$ (b) $\frac{30}{120}$

   (c) $\frac{11}{120}$ (d) None of these

4. In two bags there are to be put altogether 5 red and 12 white balls, neither bag being empty. How must the balls be divided so as to give a person who draws one ball from either bag

   (i) the least chance of drawing a red ball?

   (a) $\frac{3}{35}$ (b) $\frac{5}{32}$

   (c) $\frac{7}{32}$ (d) $\frac{1}{16}$

   (ii) the greatest chance of drawing a red ball?

   (a) $\frac{3}{4}$ (b) $\frac{2}{3}$

   (c) $\frac{5}{8}$ (d) $\frac{5}{7}$

5. If 8 coins are tossed, what is the chance that one and only one will turn up Head?

(a) $\frac{1}{16}$ (b) $\frac{3}{35}$

(c) $\frac{3}{32}$ (d) $\frac{1}{32}$

6. What is the chance that a leap year, selected at random, will contain 53 Sundays?

(a) $\frac{2}{7}$ (b) $\frac{3}{7}$

(c) $\frac{1}{7}$ (d) $\frac{5}{7}$

7. Out of all the 2-digit integers between 1 to 200, a 2-digit number has to be selected at random. What is the probability that the selected number is not divisible by 7?

(a) $\frac{11}{90}$ (b) $\frac{33}{90}$

(c) $\frac{55}{90}$ (d) $\frac{77}{90}$

8. A child is asked to pick up 2 balloons from a box containing 10 blue and 15 red balloons. What is the probability of the child picking, at random, 2 balloons of different colours?

(a) $\frac{1}{2}$ (b) $\frac{2}{3}$

(c) $\frac{1}{3}$ (d) $\frac{3}{5}$

9. Tom and Dick are running in the same race; the probability of their winning are 1/5 and 1/2 respectively. Find the probability that

(i) either of them will win the race.

(a) $\frac{7}{10}$ (b) $\frac{3}{10}$

(c) $\frac{1}{5}$ (d) $\frac{7}{9}$

(ii) neither of them will win the race.

(a) $\frac{7}{10}$ (b) $\frac{3}{10}$

(c) $\frac{2}{5}$ (d) $\frac{4}{5}$

10. Two dice are thrown. If the total on the faces of the two dices are 6, find the probability that there

are two odd numbers on the faces?

(a) $\frac{2}{5}$ (b) $\frac{1}{5}$

(c) $\frac{5}{9}$ (d) $\frac{3}{5}$

11. Amarnath appears in an exam that has 4 subjects. The chance he passes an individual subject's test is 0.8. What is the probability that he will

(i) pass in all the subjects?

(a) 0.8^4 (b) 0.3^4

(c) 0.7^3 (d) None of these

(ii) fail in all the subjects?

(a) 0.4^2 (b) 0.2^4

(c) 0.3^4 (d) None of these

(iii) pass in at least one of the subjects?

(a) 0.99984 (b) 0.9984

(c) 0.0016 (d) None of these

12. A box contains 2 tennis, 3 cricket and 4 squash balls. Three balls are drawn in succession with replacement. Find the probability that

(i) all are cricket balls.

(a) $\frac{1}{27}$ (b) $\frac{2}{27}$

(c) $\frac{25}{27}$ (d) $\frac{1}{8}$

(ii) the first is a tennis ball, the second is a cricket ball, the third is a squash ball.

(a) $\frac{8}{243}$ (b) $\frac{5}{243}$

(c) $\frac{4}{243}$ (d) $\frac{11}{243}$

(iii)all three are of the same type.

(a) $\frac{11}{81}$ (b) $\frac{1}{9}$

(c) $\frac{13}{81}$ (d) $\frac{17}{81}$

13. With the data in the above question, answer the questions when the balls are drawn in succession without replacement.

(i)

(a) $\frac{3}{84}$ (b) $\frac{1}{84}$

(c) $\frac{5}{84}$ (d) None of these

(ii)

(a) $\frac{2}{21}$ (b) $\frac{4}{21}$

(c) $\frac{1}{21}$ (d) $\frac{1}{9}$

(iii)

(a) $\frac{3}{84}$ (b) $\frac{1}{84}$

(c) $\frac{5}{84}$ (d) $\frac{11}{84}$

14. In the Mindworkzz library, there are 8 books by Stephen Covey and 1 book by Vinay Singh in shelf *A*. At the same time, there are 5 books by Stephen Covey in shelf *B*. One book is moved from shelf *A* to shelf *B*. *A* student picks up a book from shelf *B*. Find the probability that the book by Vinay Singh.

(i) is still in shelf *A*.

(a) $\frac{1}{3}$ (b) $\frac{8}{9}$

(c) $\frac{3}{4}$ (d) None of these

(ii) is in shelf *B*.

(a) $\frac{3}{54}$ (b) $\frac{4}{54}$

(c) $\frac{5}{54}$ (d) None of these

(iii) is taken by the student.

(a) $\frac{3}{54}$ (b) $\frac{1}{54}$

(c) $\frac{2}{27}$

(d) None of these

15. The ratio of number of officers and ladies in the Scorpion Squadron and in the Gunners Squadron are 3 : 1 and 2 : 5 respectively. An individual is selected to be the chairperson of their association. The chance that this individual is selected from the Scorpions is 2/3. Find the probability that the chairperson will be an officer.

(a) $\frac{25}{42}$

(b) $\frac{13}{43}$

(c) $\frac{11}{43}$

(d) $\frac{7}{42}$

16. A batch of 50 transistors contains 3 defective ones. Two transistors are selected at random from the batch and put into a radio set. What is the probability that

(i) both the transistors selected are defective?

(a) $\frac{4}{1225}$

(b) $\frac{3}{1225}$

(c) $\frac{124}{1224}$

(d) None of these

(ii) only one is defective?

(a) $\frac{141}{1225}$

(b) $\frac{121}{1225}$

(c) $\frac{123}{1224}$

(d) None of these

(iii) neither is defective?

(a) $\frac{1082}{1224}$

(b) $\frac{1081}{1225}$

(c) $\frac{1081}{1224}$

(d) None of these

17. The probability that a man will be alive in 35 years is $\frac{3}{5}$ and the probability that his wife will be alive is $\frac{3}{7}$. Find the probability that after 35 years.

(i) both will be alive.

(a) $\frac{2}{35}$

(b) $\frac{9}{35}$

(c) $\frac{6}{35}$ (d) $\frac{3}{35}$

(ii) only the man will be alive.

(a) $\frac{12}{35}$ (b) $\frac{11}{35}$

(c) $\frac{13}{35}$ (d) $\frac{8}{35}$

(iii) only the wife will be alive.

(a) $\frac{2}{35}$ (b) $\frac{3}{35}$

(c) $\frac{6}{35}$ (d) $\frac{11}{35}$

(iv) at least one will be alive.

(a) $\frac{27}{35}$ (b) $\frac{12}{35}$

(c) $\frac{11}{35}$ (d) $\frac{7}{35}$

18. *A* speaks the truth 3 out of 4 times, and *B* 5 out of 6 times. What is the probability that they will contradict each other in stating the same fact?

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$

(c) $\frac{5}{6}$ (d) None of these

19. A party of n persons sit at a round table. Find the odds against two specified persons sitting next to each other.

(a) $\frac{n+1}{2}$ (b) $\frac{n-3}{2}$

(c) $\frac{n+3}{2}$ (d) None of these

20. If 4 whole numbers are taken at random and multiplied together, what is the chance that the last digit in the product is 1, 3, 7 or 9?

(a) $\frac{15}{653}$ (b) $\frac{12}{542}$

(c) $\frac{16}{625}$ (d) $\frac{17}{625}$

21. In four throws with a pair of dices what is the chance of throwing a double twice?

(a) $\frac{11}{216}$ (b) $\frac{25}{216}$

(c) $\frac{35}{126}$ (d) $\frac{41}{216}$

22. A life insurance company insured 25,000 young boys, 14,000 young girls and 16,000 young adults. The probability of death within 10 years of a young boy, young girl and a young adult are 0.02, 0.03 and 0.15 respectively. One of the insured persons dice. What is the probability that the dead person is a young boy?

(a) $\frac{36}{165}$ (b) $\frac{25}{166}$

(c) $\frac{26}{165}$ (d) $\frac{32}{165}$

23. Three groups of children contain 3 girls and 1 boy, 2 girls and 2 boys, and 1 girl and 2 boys respectively. One child is selected at random from each group. The probability that the three selected consist of 1 girl and 2 boys is

(a) $\frac{3}{8}$ (b) $\frac{1}{5}$

(c) $\frac{5}{8}$ (d) $\frac{3}{5}$

24. A locker at the world famous WTC building can be opened by dialing a fixed three-digit code (between 000 and 999). Don, a terrorist, only knows that the number is a three-digit number and has only one six. Using this information he tries to open the locker by dialing three digits at random. The probability that he succeeds in his endeavour is

(a) $\frac{1}{243}$ (b) $\frac{1}{900}$

(c) $\frac{1}{1000}$ (d) $\frac{3}{216}$

25. In a bag there are 12 black and 6 white balls. Two balls are chosen at random and the first one is found to be black. The probability that the second one is also black is:

(a) $\frac{11}{17}$ (b) $\frac{12}{17}$

(c) $\frac{13}{18}$ (d) None of these

26. In the above question, what is the probability that the second one is white?

(a) $\frac{3}{17}$ (b) $\frac{6}{17}$

(c) $\frac{5}{17}$ (d) $\frac{1}{17}$

27. A fair dice is tossed six times. Find the probability of getting a third six on the sixth throw.

(a) $\frac{{}^5C_2\,5^2}{6^2}$ (b) $\frac{{}^5C_2\,5^3}{6^6}$

(c) $\frac{{}^5C_3\,5^2}{6^3}$ (d) $\frac{{}^5C_3\,5^2}{6^6}$

28. In shuffling a pack of cards, four are accidentally dropped. Find the chance that the dropped cards should be one from each suit.

(a) $\frac{13^4}{{}^{52}C_4}$ (b) $\frac{12^4}{{}^{52}C_2}$

(c) $\frac{13^2}{{}^{34}C_2}$ (d) $\frac{12^2}{{}^{22}C_3}$

29. Three of the six vertices of a regular hexagon are chosen at random. The probability that the triangle with these vertices is equilateral is

(a) $\frac{1}{10}$ (b) $\frac{3}{10}$

(c) $\frac{1}{5}$ (d) $\frac{4}{10}$

30. There are 5 red shoes and 4 black shoes in a sale. They have got all mixed up with each other. What is the probability of getting a matched shoe if two shoes are drawn at random?

(a) $\frac{6}{9}$ (b) $\frac{4}{9}$

(c) $\frac{2}{9}$ (d) $\frac{5}{9}$

31. A person draws a card from a pack of 52, replaces it and shuffles it. He continues doing it until he

draws a heart. What is the probability that he has to make 3 trials?

(a) $\frac{9}{64}$ (b) $\frac{3}{64}$

(c) $\frac{5}{64}$ (d) $\frac{1}{64}$

32. For the above problem, what is the probability if he does not replace the cards?

(a) $\frac{274}{1700}$ (b) $\frac{123}{1720}$

(c) $\frac{247}{1700}$ (d) $\frac{234}{1500}$

33. An event X can happen with probability P, and event Y can happen with probability $P¢$. What is the probability that exactly one of them happens?

(a) $P + P¢ - 2PP¢$ (b) $2PP¢ - P¢ + P$

(c) $P - P¢ + 2PP¢$ (d) $2P¢P - P¢ + P$

34. In the above question, what is the probability that at least one of them happens?

(a) $P + P¢ + PP¢$ (b) $P + P¢ - PP¢$

(c) $2PP¢ - P¢ - P$ (d) $P + P¢ - 2PP¢$

35. Find the probability that a year chosen at random has 53 Mondays.

(a) $\frac{5}{28}$ (b) $\frac{3}{28}$

(c) $\frac{1}{28}$ (d) $\frac{3}{28}$

36. There are four machines and it is known that exactly two of them are faulty. They are tested one by one in a random order till both the faulty machines are identified. Then the probability that only two tests are needed is

(a) $\frac{2}{3}$ (b) $\frac{1}{6}$

(c) $\frac{1}{3}$ (d) $\frac{5}{6}$

37. For the above question, the probability that exactly 3 tests will be required to identify the 2 faulty machines is

(b) 1

(a) $\frac{1}{2}$

(c) $\frac{1}{3}$ (d) $\frac{2}{3}$

38. Seven white balls and three black balls are randomly placed in a row. Find the probability that no two black balls are placed adjacent to each other.

(a) $\frac{7}{15}$ (b) $\frac{2}{15}$

(c) $\frac{3}{7}$ (d) $\frac{2}{7}$

39. A fair coin is tossed repeatedly. If Head appears on the first four tosses then the probability of appearance of tail on the fifth toss is

(a) $\frac{1}{7}$ (b) $\frac{1}{2}$

(c) $\frac{3}{7}$ (d) $\frac{2}{3}$

40. The letters of the word 'article' are arranged at random. Find the probability that the vowels may occupy the even places.

(a) $\frac{2}{35}$ (b) $\frac{1}{35}$

(c) $\frac{3}{36}$ (d) $\frac{2}{34}$

41. What is the probability that four Ss come consecutively in the word MISSISSIPPI?

(a) $\frac{4}{165}$ (b) $\frac{2}{165}$

(c) $\frac{3}{165}$ (d) $\frac{1}{165}$

42. Eleven books, consisting of five Engineering books, four Mathematics books and two Physics books, are arranged in a shelf at random. What is the probability that the books of each kind are all together?

(a) $\frac{5}{1155}$ (b) $\frac{2}{1155}$

(c) $\frac{3}{1155}$ (d) $\frac{1}{1155}$

43. Three students appear at an examination of Mathematics. The probability of their success are 1/3, 1/4, 1/5 respectively. Find the probability of success of at least two.

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

(c) $\frac{3}{4}$ (d) $\frac{3}{5}$

44. A bag contains 8 white and 4 red balls. Five balls are drawn at random. What is the probability that two of them are red and 3 are white?

(a) $\frac{12}{44}$ (b) $\frac{14}{33}$

(c) $\frac{14}{34}$ (d) $\frac{15}{34}$

45. A team of 4 is to be constituted out of 5 girls and 6 boys. Find the probability that the team may have 3 girls.

(a) $\frac{4}{11}$ (b) $\frac{3}{11}$

(c) $\frac{5}{11}$ (d) $\frac{2}{11}$

46. 12 persons are seated around a round table. What is the probability that two particular persons sit together?

(a) $\frac{2}{11}$ (b) $\frac{1}{6}$

(c) $\frac{3}{11}$ (d) $\frac{3}{15}$

47. Six boys and six girls sit in a row randomly. Find the probability that all the six girls sit together.

(a) $\frac{3}{22}$ (b) $\frac{1}{132}$

(c) $\frac{1}{1584}$ (d) $\frac{1}{66}$

48. From a group of 7 men and 4 women a committee of 6 persons is formed. What is the probability that the committee will consist of exactly 2 women?

(a) $\frac{5}{11}$ (b) $\frac{3}{11}$

(c) $\frac{4}{11}$ (d) $\frac{2}{11}$

49. A bag contains 5 red, 4 green and 3 black balls. If three balls are drawn out of it at random, find the probability of drawing exactly 2 red balls.

(a) $\frac{7}{22}$ (b) $\frac{10}{33}$

(c) $\frac{7}{12}$ (d) $\frac{7}{11}$

50. A bag contains 100 tickets numbered 1, 2, 3, …, 100. If a ticket is drawn out of it at random, what is the probability that the ticket drawn has the digit 2 appearing on it?

(a) $\frac{19}{100}$ (b) $\frac{21}{100}$

(c) $\frac{32}{100}$ (d) $\frac{23}{100}$