Bank Job Lecture Sheet

Lecture 15

Lecture Contents

☑ Permutation & Combination

☑ Ven Diagram

Permutation & Combination

Teacher's Discussion

1. **Committee X has 4 members, committee Y has 5 members, and these committees have no members in common. If a task force is to be formed consisting of one member of X and one member of Y, how many different task forces are possible?** [Combined 9 Banks Officer- 2022]

   A. 6 B. 9 C. 10 D. 20 **Ans:** D

2. **Wendy has 5 pants and 8 shirts. How many different combinations can she make with these items?** [Bangladesh Bank AD- 2021]

   A. 13 B. 24 C. 40 D. 21 **Ans:** C

3. **There are 5 doors to a lecture room. In how many ways can a student enter the room through a door and leave the room by a different door?** [Bangladesh Bank AD- 2021]

   A. 10 B. 20 C. 9 D. 623 **Ans:** B

4. **A committee of 5 is to be formed from 6 male students and 5 female students. In how many ways can this be done so that the committee contains at least one male and one female students?** [Rupali Bank Cash (Cancelled) -2018]

   A. 455 B. 485 C. 225 D. 450 **Ans:** A

5. **A committee consist of 3 members. If there are 7 men and 5 women available to serve on the committee. How many different committees can be formed?** [Bangladesh Krishi Bank Cash Officer-2018]

   A. 120 B. 220 C. 230 D. 250 **Ans:** B

6. **A football team is to be consisted out of 14 boys. In how many ways the team can be chosen so that the owner of the ball is always in the team?** [Bangladesh Bank AD- 2018]

   A. 135 B. 143 C. 169 D. 286 **Ans:** D

7. **There are 10 true-false questions in an examination. These questions can be answered in-** [Bangladesh Bank Officer- 2019]

A. 20 ways B. 100 ways C. 210 ways D. 1024 ways **Ans:** D

8. **A class has 30 students. The class needs to select 3 representatives. In how many ways can be this be done?** [Uttara Bank AO- 2022]

A. 400 B. 2050 C. 3040 D. 4060 **Ans:** D

9. **$^nC_1 + {}^nC_2 + {}^nC_2 + \ldots\ldots {}^nC_2 = ?$** [Combined 5 Banks Officer- 2018]

A. 2^n B. 2^{n-1} C. $\frac{n(n-1)(n^2+1)}{2}$ D. $2^n - 1$ **Ans:** D

10. **In your bookshelf, you have five favorite books. If you decide to arrange these five books in every possible combination and moved just one book in every half a minute. How much time it will take you to arrange?** [Sonali FF Cash- 2019]

A. 3 hours B. 1 hours C. 2 hours D. 30 minutes **Ans:** B

11. **A person can travel from Dhaka to Faridpur in 5 different ways and then come back in any of these ways. How many different routes are possible for him to go to Faridpur and come back?** [Rupali Bank Officer- 2010]

A. 10 B. 9 C. 25 D. 20 **Ans:** C

12. **There are 8 books on a shelf of which 2 are paperback and 6 are hardbacks. How many possible selections of 4 books from this shelf include at least 1 paperback book?** [ICB SO- 2011]

A. 40 B. 45 C. 50 D. 55 **Ans:** D

13. **A class has 30 students. The class needs to select 3 representatives. In how many ways can be this be done?** [Bank Asia TO- 2016]

A. 400 B. 2050 C. 3040 D. 4060 **Ans:** D

14. **Mr. X will be the Chairman of the committee. In how many ways can a committee of 5 members be chosen from a total of 8 people given that Mr. mush be one of them?** [PKB Officer- 2021]

A. 35 B. 70 C. 120 D. 56 **Ans:** A

15. **How many different selections of 4 books can be made from 10 different books, if 2 particular books are never selected?** [Conbined 2 Banks Senior Officer (IT): 2020]

A. 20 B. 45 C. 70 D. 210 **Ans:** C

16. **A football team is to be consisted out of 14 boys. In how many ways the team can be chosen so that the owner of the ball is always in the team?** [BB AD- 2018]

A. 286 B. 210 C. 201 D. 200 **Ans:** A

17. **A committee of 5 members is to be formed out of 3 trainees, 4 professors and 6 research assciates. In how many different ways can this be done, if the committee should have 4 professors and 1 research and 1 research assorciate or all 3 trainees and 2 professors?**

A. 15 B. 18 C. 25 D. 12 **Ans:** D

18. **A group of 7 members having a majority of boys is to be formed out of 7 boys and 4 girls. The number of ways the group can formed is-** [Rupali Bank Officer- 2019]

A. 80 B. 100 C. 90 D. 110 **Ans:** B

19. **There are 10 books on a shelf, of which 4 are paperbacks and 6 are hardbacks. How many possible selections of 5 books from the shelf contain at least one paperback and at lest one hardback?** [Combined 4 Banks Officer- 2019]

A. 75 B. 120 C. 210 D. 246 **Ans:** D

Student's Drill

1. **A committee of 5 is to be formed from 6 male students and 5 female students. In how many ways can this be done so that the committee contains at least one male and one female students?** [Rupali Bank Cash (Cancelled) -2018]
   A. 455 B. 485 C. 225 D. 450 **Ans:** A

2. **A committee consist of 3 members. If there are 7 men and 5 women available to serve on the committee. How many different committees can be formed?** [Bangladesh Krishi Bank Cash Officer-2018]
   A. 120 B. 220 C. 230 D. 250 **Ans:** B

3. **In how many different ways can the letters of the word 'GAMBLE' be arranged?**
   A. 15 B. 25 C. 250 D. 720 **Ans:** D

4. **In how many different ways can the letters of the word 'SMART' be arranged?**
   A. 25 B. 120 C. 180 D. 150 **Ans:** B

5. **In how many different ways can the letters of the word 'RIDDLED' be arranged?**
   A. 840 B. 1680 C. 2520 D. 5040 **Ans:** A

6. **In how many different ways can the letters of the word 'CREATE' be arranged?**
   A. 25 B. 36 C. 360 D. 720 **Ans:** C

7. **In how many different ways can the letters of the word 'BANANA' be arranged?**
   A. 60 B. 120 C. 360 D. 720 **Ans:** A

8. **In how many ways can a committee of 4 people be chosen out of 8 people?**
   A. 32 B. 70 C. 110 D. 126 **Ans:** B

9. **Out of 5 men and 3 women, a committee of three members is to be formed so that it has 1 woman and 2 men. In how many different ways can it be done?**
   A. 10 B. 20 C. 23 D. 30 **Ans:** D

10. **In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?**
    A. 45 B. 63 C. 90 D. 126 **Ans:** B

11. **In how many ways, a committee of 6 members be selected from 7 men and 5 ladies consisting of 4 men and 2 ladies?**
    A. 350 B. 380 C. 410 D. 460 **Ans:** A

12. **A student is to answer 10 out of 13 questions in an examination such that he must choose at least 4 from the first five questions. The number of choices available to him is-** [Conbined 4 Banks Officer- 2019]
    A. 140 B. 196 C. 280 D. 346 **Ans:** B

13. **At the end of a banquet 10 people shake hands with each other. How many handshakes will there be in total?** [BB Officer- 18]
    A. 100 B. 20 C. 45 D. 90 **Ans:** C

14. **How many permutations of seven different letters may be made?** [BKB Cash- 2017]
    A. 1 B. 7 C. 7! D. 6! **Ans:** C

15. **At a party, everyone shook hands with everybody else. There were 66 handshakes. How many people were there in the party?** [BB AD 12, RAKUB SO- 15]
    A. 13 B. 11 C. 10 D. 12 **Ans:** D

Solution of Student's Drill

1. Given that, At least one male and one female are included in the committee

So, there are 4 way to select the committee of following condition,

Way	Male (6)	Female (5)	Committee	Total Result
01	${}^6C_1$	${}^5C_4$	${}^6C_1 \times {}^5C_4$ $= 5 \times 6$	30
02	${}^6C_2$	${}^5C_3$	${}^6C_2 \times {}^5C_3$ $= 15 \times 10$	150
03	${}^6C_3$	${}^5C_2$	${}^6C_3 \times {}^5C_3$ $= 20 \times 10$	200
04	${}^6C_4$	${}^5C_1$	${}^6C_4 \times {}^5C_1$ $= 15 \times 5$	75

Total ways = 30 + 150 + 200 + 75 = 455 **(Ans.)**

2. Total committee member should be selected = 3

Men = 7 and Women = 5

So, the combinations can be:

(i) ${}^7C_3 \times {}^5C_0 = 35$

(ii) ${}^7C_2 \times {}^5C_1 = 21 \times 5 = 105$

(iii) ${}^7C_1 \times {}^5C_2 = 7 \times 10 = 70$

(iv) ${}^7C_0 \times {}^5C_3 = 1 \times 10 = 10$

So, Total no. of committee will be

$= 35 + 105 + 70 + 10 = 220$ **(Ans.)**

3. Total letters = 6

$\therefore$ Total way = 6!

$= 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$ **(Ans.)**

4. Total letters = 5

$\therefore$ Total way = $5! = 5 \times 4 \times 3 \times 2 \times 1$

$= 120$ **(Ans.)**

5. Here total letters = 7, in which quantity of d is 3

$\therefore$ Total way = $\frac{7!}{3!}$

$= \frac{7 \times 6 \times 5 \times 4 \times 3!}{3!} = 840$ **(Ans.)**

6. Here total letters = 6, Quantity of E = 2

$\therefore$ Total way = $\frac{6!}{2!}$

$= \frac{6 \times 5 \times 4 \times 3 \times 2!}{2!} = 360$ **(Ans.)**

7. Here total letters = 6,

Quantity of A = 3, Quality of N = 2

$\therefore$ Total ways = $\frac{6!}{3!2!}$

$= \frac{6 \times 5 \times 4 \times 3 \times 2}{3 \times 2 \times 2!} = 60$ **(Ans.)**

8. Total ways = ${}^8C_4 = \frac{8 \times 7 \times 6 \times 5}{4 \times 3 \times 2} = 70$ **(Ans.)**

9. Total ways = ${}^5C_2 \times {}^3C_1$

$= \frac{5 \times 4}{2} \times 3 = 30$ **(Ans.)**

10. Total ways = ${}^7C_5 \times {}^3C_2$

$= {}^7C_2 \times {}^3C_2$ [$\because {}^7C_5 = {}^7C_2$ লেখা যায়]

$= \frac{7 \times 6}{2} \times \frac{3 \times 2}{2}$

$= 21 \times 3 = 63$ **(Ans.)**

11. Total ways = ${}^7C_4 \times {}^5C_2$

$= \frac{7 \times 6 \times 5 \times 4}{4 \times 3 \times 2} \times \frac{5 \times 4}{2}$

$= 35 \times 10 = 350$ **(Ans.)**

12. ১ম 5টি থেকে 4টি এবং শেষের 8টি থেকে 6 নিলে = ${}^5C_4 \times {}^8C_6$ $\times = 5 \times 28 = 140$

১ম 5টি থেকে 5টি এবং শেষের 8টি থেকে 5 নিলে = ${}^5C_5 \times {}^8C_5$ $\times = 1 \times 28 = 56$

$\therefore$ The number of choices available

$= 140 + 56 = 196$ **(Ans.)**

13. $\therefore$ Number of handshakes = $\frac{n(n-1)}{2} = \frac{10(10-1)}{2}$

$= 45$ **(Ans.)**

14. 7টি ভিন্ন বর্ণ বা সংখ্যা বা বস্তুকে 7! = 5040 ভাবে সাজানো/বিন্যাস করা যাবে।

15. Let, n be the number of persons in the party
Given that, the number of hands shake = 66
Total number of hands shake is given by ${}^nC_2$
According to the question,

${}^nC_2 = 66$ Or, $\frac{n!}{(n-2)! \times 2!} = 66$ [Formula : ${}^nC_r = \frac{n!}{(n-r)! \times r!}$]

Or, $\frac{n(n-1)(n-2)!}{2(n-2)!} = 66$

Or, $n^2 - n = 66 \times 2 = 132$
Or, $n^2 - n - 132 = 0$
Or, $n^2 - 12n + 11n - 132 = 0$
Or, $n(n-12) + 11(n-12) = 0$
Or, $(n-12)(n+11) = 0$
$\therefore$ $n = 12$ [$n \neq -11$ we cannot take negative value of n]
$\therefore$ The number of persons in the party = 12 **(Ans.)**

Venn Diagram

Teacher's Discussion

1. Of 30 applicants for a job. 14 had lest 4 years experience, 18 had degress and 3 had less than 4 years expence and did not have a degree. How many of the applicants had at lest 4 years experience and a degree? [Combined 7 Bank Officer (Cash)-2023]
A. 13 B. 9 C. 7 D. 5 **Ans:** d

2. Shonghoti and Shouhardo Clubs consist of 200 and 270 members respectively. If the total member of the two clubs is 420 then how many members belong to both clubs? [Bangladesh Bank AD- 2018**]**
A. 30 B. 40 C. 50 D. 60 **Ans:** C

3. In recent survey of the students of a public university, it is found that 65% students are good in Mathematics and 45% students are good in Statistics. How many students are good in both Mathematics and Statistics of the public university? [Sadharon Bima Corporation AM- 2019**]**
A. 20% B. 5% C. 15% D. 10% **Ans:** D

4. In a group of 15, 7 have studied Latin, 8 have studied Greek and 3 have not studied either. How many of these studied both Latin and Greek? [Uttara Bank AO- 2022]
A. 1 B. 3 C. 4 D. 5 **Ans:** B

5. There are 12 persons in a party. Half of them are the members of club A, one-third are the members of club B and one-fourth are members of both club. How many persons are not the members of any club?
A. 3 B. 4 C. 5 D. 6 **Ans:** C

6. Out of 53 men, paly football, 18 men play cricket and 10 men play neither football nor cricket. How many men play both football and cricket?
A. 10 B. 9 C. 11 D. 12 **Ans:** C

7. There are 30 students in a class. Among them, 8 students are learning both English and French. A total of 18 students are learning English. If every student is learning at least one language, how many students are learning Frence in total?
A. 10 B. 15 C. 18 D. 20 **Ans:** D

8. **In a group of 52 persons, 16 drink tea but not coffee and 33 drink tea. How many drink coffee but not tea?** [Pubali Bank Ltd. Junior Officer- 2019]
A. 3 B. 7 C. 19 D. 17 **Ans:** C

9. **In a class of 78 students, 41 are taking French and 22 are taking German. Of the students taking French or German, 9 are taking both courses. How many students are not enrolled in either course?** [Janata Bank Ltd. AEO (IT)- 2015; BKB Officer- 2017]
A. 6 B. 15 C. 24 D. 69 **Ans:** C

10. **In an examination, 34% of the students failed in Mathematics and 42% failed in English. If 20% of the students failed in both the subjects, then the percentage of students who passed in both the subjects was:** [Pubali Bank Ltd. JO (Cash)- 2014; Sonali Bank Officer (Cash)- 2018]
A. 44 B. 50 C. 54 D. 56 **Ans:** A

11. **A sport club has 50 members. Of these, 35 play golf, 30 play soccer and 18 play both golf and soccer. How many members do play neither golf nor soccer?** [Combined 7 Banks Senior Officer- 2021]
A. 0 B. 5 C. 3 D. 17 **Ans:** C

12. **In an office, 44% of the workers prefer coffee and 72% prefer tea. if teach of them prefers coffee or tea and 40 like both, the total number of workers in the office is-** [Sonali Bank FF (Cash)- 2019]
A. 200 B. 250 C. 240 D. 210 **Ans:** B

13. **In a class of 120 students, 70 percent can speak only Bengali and the rest can speak English. If 25 percent of those in the class who can speak English can also speak Bengali, how many of the studetns in the class can speak Bengali?** [PKB SEO- 2018]
A. 39 B. 48 C. 84 D. 93 **Ans:** D

Student's Drill

1. **A box contains 6 bottles of variety 1 drink, 3 bottles of variety 2 drink and 4 bottles of variety 3 drinks. Three bottles of them are drawn at random, what is the probability that the three are not of the same variety.** [JRT 2 Bank JBL & RBL Officer-2020]
A. $\frac{261}{286}$ B. $\frac{161}{286}$ C. $\frac{61}{186}$ D. $\frac{221}{256}$ **Ans:** A

2. **A committee of 5 is to be formed from 6 male students and 5 female students. In how many ways can this be done so that the committee contains at least one male and one female students?** [Rupali Bank Cash (Cancelled) -2018]
A. 450 B. 455 C. 555 D. 485 **Ans:** B

3. **A committee consist of 3 members. If there are 7 men and 5 women available to serve on the committee. How many different committees can be formed?** [Bangladesh Krishi Bank Cash Officer-2018]
A. 120 B. 190 C. 220 D. 240 **Ans:** C

4. **In a class of 40 students, each student plays at least one of the games: chess, carom and table tennis. Among the students, 18 play chess, 20 play table tennis and 27 play caroms. Further, 7 students play both chess and table tennis, 12 play both table tennis and carom and 4 play chess, carom and table tennis together. Find the number of students who play chess and carom but not table tennis.** [Janata Bank Ltd AEO-RC-2017]
A. 10% B. 15% C. 25% D. 20% **Ans:** D

5. **A total of 50 employees works in a bank branch. of these 22 have taken the accounting course, 15 have taken finance, 14 marketing, 9 of them taken exactly 2 of the courses, 1 of them has taken all. How many of the 50 employees have taken none of the course?** [Bangladesh Bank AD-2001]

A. 3 B. 4 C. 5 D. 8 **Ans:** B

6. **In a survey at an airport, 55 said that last year they had been to India.53 to Napal and 79 to Bhutan,18 had been to India and Nepal ,17 to India and Bhutan and 25 to Nepal and Bhutan, while 10 had to all three countries. How many travelers took part in the Survey?** [Rupali Bank Officer Cash (Re-Exam)-2018) (Agrani Bank Senior Officer (Auditor)-2018) Solution: See- (Agrani Bank Senior Officer (Auditor)-2018]

A. 5 B. 7 C. 9 D. 10 **Ans:** A

7. **70 students are studying physics, mathematics and chemistry. 40 students study mathematics, 35 study physics and 30 students' chemistry.15 students are studyin g all the subjects. How many students are studying exactly two of the subjects? [Rupali Bank Cash (Cancelled) -2018; Sonali Bank Officer- 2018]**

A. 95 B. 137 C. 157 D. 237 **Ans:** B

8. **In a survey at an airport, 55 travelers said that last year they had been to Spain, 53 to France and 79 to Germany,18 had been to Spain and France, 17 to Spain and Germany, and 25 to France and Germany while 10 had to all three countries. How many travelers took part in the Survey?** [Agrani Bank SO (Auditor)-2018]

A. 67 B. 87 C. 97 D. 107 **Ans:** C

9. **Among 50 people, 35 can speak English, 25 can both English and Bangla, and each can speak at least one of the two languages. How many speak only Bangla?** [Bangladesh Krishi Bank Cash Officer-2018]

A. 5 B. 9 C. 8 D. 6 **Ans:** D

Solution of Student's Drill

1. Total botles = 6 + 3 + 4 = 13

Probability that they are same colour = $({}^{6}C_3 + {}^{6}C_3 + {}^{4}C_3 \div {}^{13}C_3 = (20 + 1 + 4) \div 286 = \frac{25}{286}$

We know tha, Probability that they are not same colour = 1 – Probability that they are same colour

$= 1 - \frac{25}{286} = \frac{261}{286}$ **(Ans.)**

2. Given that, At least one male and one female are included in the committee

So, there are 4 way to select the committee of following condition,

Way	Male (6)	Female (5)	Committee	Total Result
01	${}^{6}C_1$	${}^{5}C_4$	${}^{6}C_1 \times {}^{5}C_4 = 5 \times 6$	30
02	${}^{6}C_2$	${}^{5}C_3$	${}^{6}C_2 \times {}^{5}C_3 = 15 \times 10$	150
03	${}^{6}C_3$	${}^{5}C_2$	${}^{6}C_3 \times {}^{5}C_3 = 20 \times 10$	200
04	${}^{6}C_4$	${}^{5}C_1$	${}^{6}C_4 \times {}^{5}C_1 = 15 \times 5$	75

Total ways = 30 + 150 + 200 + 75 = 455 (**Ans.**)

3. Total committee member should be selected = 3

Men = 7 and Women = 5

So, The combinations can be:

(i) ${}^7C_3 \times {}^5C_0 = 35$

(ii) ${}^7C_2 \times {}^5C_1 = 21 \times 5 = 105$

(iii) ${}^7C_1 \times {}^5C_2 = 7 \times 10 = 70$

(iv) ${}^7C_0 \times {}^5C_3 = 1 \times 10 = 10$

So, Total no. of committee will be = 35 + 105 + 70 + 10 = 220 **(Ans.)**

4. Let, n (∪) = 100%

$\therefore$ n (∪) = n(T) + n(N) – n (T ∩ N) + None

$\Rightarrow$ 100% = 65% + 40% – 25% + None

$\Rightarrow$ None = 20% **(Ans.)**

5. Let, no. of total students = n(∪) = 60

No. of students fail in Bangla = n (B) = 23

" " " " " Math = n(M) = 33

" " " " " English = n(E) = 22

" " " " " Bangla & Math = n(B ∩ M) = 12

" " " " " Math & English = n(M∩E) = 8

" " " " " English & Bangla = n(E ∩ B) = 7

" " " " " Bangla Math & English = n(B ∩ M ∩ E) = 5

We know, n(∪) = n(B) + n(M) + n(E) – n(B ∩ M) – n(M ∩ E) – n(E ∩ B) + n(B ∩ M ∩ E) + None

$\Rightarrow$ 60 = 23 + 33 + 22 – 12 – 7 – 8 + 5 + None

$\Rightarrow$ None = 60 + 27 – 83 = 4 **(Ans.)**

6. Let, no. of total students = n(∪) = 100

No. of students plya Football = n(F) = 42

" " " " Cricket = n(C) = 46

" " " " Hockey = n(H) = 39

" " " " F & C = n(F ∩ C) = 13

" " " " C & H = n(C ∩ H) = 14

" " " " H & F = n(H ∩ F) = 12

" " " " F, C & H = n(F ∩ C ∩ H) = x (let)

We know, n(∪) = n(F) + n(C) + n(H) – n(F ∩ C) – n(C ∩ H) – n(H ∩ F) + n(F ∩ C ∩ H) + None

$\Rightarrow$ 100 = 42 + 46 + 39 – 13 – 14 – 12 + x + 7

$\Rightarrow$ 100 = 134 – 39 + x $\Rightarrow$ x = 5

No. of students who play all three games is 5 **(Ans.)**

7. Let, no. of total travelers = n (I ∪ N ∪ B)

No. of traveler to India = n (I) = 55

" " " to Nepal = n(N) = 53

" " " to Bhutan = n(B) = 79

" " " to I & N = n(I ∩ N) = 18

" " " to N & B = n(N ∩ B) = 25

" " " to B & I = n(B ∩ I) = 17

" " " to I, N & B = n(I ∩ N ∩ B) = 10

We know, n (I ∪ N ∪ B) = n (I) + n(N) + n(B) – n(I ∩ N) – n(N ∩ B) – n(B ∩ I) + n(I ∩ N ∩ B)

= 55 + 53 + 79 – 18 – 25 – 17 + 10

= 187 – 60 + 10 = 137 **(Ans.)**

8. Only one country/Exactly one country

= n(A) + n(B) + n(C) – 2 n(A ∩ B) – 2 n(B ∩ C) – 2 n(C ∩ A) + 3 n(A ∩ B ∩ C)

= 55 + 53 + 76 – 2 (18 + 17 + 25) + 3 (10)

= 187 – 120 + 30 = 97 **(Ans.)**

9. n(Ch ∪ C ∪ T) = 40

n(Ch) = 18; n(T) = 20; n(C) = 27

n(Ch ∩ T) = 7; n(T ∩ C) = 12

n(Ch ∩ C ∩ T) = 4

We know, n(Ch ∪ C ∪ T) = n(Ch) + n(C) + n(T) – n(Ch ∩ C) – n(C ∩ T) – n(T ∩ Ch) + n(Ch ∩ C ∩ T)

40 = 18 + 20 + 27 – n(Ch ∩ C) – 12 – 7 + 4

40 = 69 – n(Ch ∩ C) – 19

40 = 50 – n(Ch ∩ C)

n(Ch ∩ C) = 10

∴ No. of students who play Ch and C is 10

Hence no. of student who play Ch & C but not T is 10 – 4 = 6 **(Ans.)**

Home Practice

1. **In an office, 72% people liked Tea and 44% people liked Coffee. If each of them liked either coffee or Tea and 40 liked both, what is number of employees?** [BUP (FBS): 2021-22]

A. 100 B. 220 C. 320 D. 250 **Ans:** D

2. **Club A has 20 members and Club B has 27. If a total of 42 people belong to the two clubs, how many people belong to both clubs?** [BKB Officer (Cash)- 2017]

A. 3 B. 4 C. 5 D. 6 **Ans:** C

3. **If 61% of Bangladeshi people like coffee and 74% like tea, how many like both?** [BKB (Cash)- 2017]

A. 13% B. 16% C. 26% D. 35% **Ans:** D

4. **In recent survey of the students of a public university, it is found that 65% students are good in Mathematics and 45% students are good in Statistics. How many students are good in both Mathematics and Statistics of the public university?** [Sadharan Bima AM- 2019]

A. 20% B. 5% C. 15% D. 10% **Ans:** D

5. **Out of 80 children, 35% can play only cricket, 45% can play only table tennis and remaining children can play both the games. In all, many children can play cricket?** [Sadharan Bima JO- 2019]

A. 28 B. 36 C. 44 D. 55 **Ans:** C

6. **In a class 75% passed in English, 60% in Mathematics and 25% failed in both the subjects. What is the percentage who passed in both subjects?** [Agrani Bank Ltd SO- 2017]

A. 60% B. 55% C. 50% D. 45% **Ans:** A

7. **Of the 65 cars on a car lot, 45 have air conditioning, 30 have power windows, and 12 have both air conditioning and power windows. How many of the cars on the lot have neither air conditioning nor power windows?** [HBFC Senior Officer- 2011]

A. 2 B. 8 C. 12 D. 20 **Ans:** A

8. **Of the 120 households in an area, 55 have cars, 35 have motor bikes, and 20 have both cars and motor bikes. How many of the households in the area have neither cares nor motor bikes?** [ICB Officer-11]

A. 110 B. 90 C. 50 D. 30 **Ans:** C

9. **In a city 40% of the people have black hair, 25% have black eyes and 10% have both black hair and black eyes. What percentage of the people in the city has neither black hair nor black eyes?** [HBFC Senior Officer- 2011]

A. 35 B. 40 C. 56 D. 50 **Ans:** C

10. **In a group of students, 65 play football, 45 play hockey, 42 play cricket, 20 play football and hockey, 25 play football and cricket, 15 play hockey and cricket and 8 play all the three games. Find the total number of students in the group. (Assume that each student in the group plays at least one game)**

A. 350 B. 400 C. 100 D. 50 **Ans:** C

11. **In a class of 30 students 18 play football, 14 play cricket and 5 do not play any game. How many students play both the games?** [Agrani Bank Senior Officer- 2010]

A. 5 B. 7 C. 9 D. 11 **Ans:** B

12. **1, 2, 3, 4, 5, 6 অঙ্কগুলো প্রতিটি একবার নিয়ে 4 অঙ্কের কতগুলি ভিন্ন সংখ্যা হবে?**

A. 120 B. 240 C. 360 D. 540 **Ans:** C

13. শাহাবাগ থেকে ফার্মগেটের 3টি ভিন্ন রাস্তা আছে আর ফার্মগেট থেকে বনানীর 4টি ভিন্ন রাস্তা আছে। ফার্মগেট হয়ে শাহবাগ থেকে বনানী যাবার কয়টি ভিন্ন রাস্তা আছে?

A. 4 B. 3 C. 7 D. 12 **Ans:** D

14. CALCUTTA শব্দটির বর্ণগুলোকে একত্রে নিয়ে বিন্যাস সংখ্যা AMERICA শব্দটির বর্ণগুলো একত্রে নিয়ে বিন্যাস সংখ্যার কত গুণ?

A. 2 B. 3 C. 4 D. 5 **Ans:** A

15. 'LEADER' শব্দের বর্ণগুলোকেক মোট কতভাগে বিন্যস্ত করা যায়?

A. 72 B. 144 C. 360 D. 720 **Ans:** C

16. দুটি R ও দুটি A কে একসঙ্গে রেখে ARRANGE শব্দটি কতভাগে সাজানো যায়?

A. 360 B. 120 C. 95 D. 75 **Ans:** B

17. SCIENCE শব্দটির স্বরবর্ণগুলোকে একত্রে রেখে সব কয়টি বর্ণকে সম্ভাব্য যত উপায় সাজানো যায় তার সংখ্যা হচ্ছে–

A. 60 B. 120 C. 180 D. 420 **Ans:** C

18. একটি অনুষ্ঠানে কিছু লোক উপস্থিত ছিল। তারা কেবল একজন ছাত্র একজনের সাথে একবার কমরমর্দন করতে পারে। করমর্দন সংখ্যা 300 হলে ঐ অনুষ্ঠানে কত জন উপস্থিত ছিল? [৪৩তম বিসিএস]

A. 24 B. 25 C. 26 D. 30 **Ans:** B

19. 5 জন পুরুষ ও 4 জন মহিলার একটি দল থেকে একজন পুরুষ ও দুইজন মহিলা নিয়ে কত প্রকারে একটি কমিটি গঠন করা যাবে? [৪১তম বিসিএস]

A. 10 B. 15 C. 25 D. 30 **Ans:** D

20. 6 জন খেলোয়াড়কে সমান সংখ্যক দুইটি দলে কত ভাবে বিভক্ত করা যায়? [৪০তম বিসিএস]

A. 10 B. 20 C. 60 D. 120 **Ans:** B

21. 4 জন মহিলা ও 6 জন পুরুষের মধ্য থেকে 4 সদস্যবিশিষ্ট একটি উপ-কমিটি গঠন করতে হবে যাতে 1 জন নির্দিষ্ট পুরুষ সর্বদাই উপস্থিত থাকেন। কত প্রকারে ঐ কমিটি গঠন করা যেতে পারে? [৩৮তম বিসিএস]

A. 210 B. 304 C. 84 D. 120 **Ans:** C

22. 10 টি জিনিসের মধ্যে 2 টি এক জাতীয় জিনিস এবং বাকীগুলো ভিন্ন ভিন্ন জিনিস। ঐ জিনিসগুলো থেকে প্রতিবারে 5 টি করে নিয়ে কত প্রকারে বাছাই করা যায়? [৩৭তম বিসিএস]

A. 170 B. 182 C. 190 D. 192 **Ans:** B

23. 12টি পুস্তক থেকে 5টি কত প্রকারে বাছাই করা যায় যেখানে 2টি পুস্তক সর্বদাই অন্তভূক্ত থাকবে? [৩৬তম বিসিএস]

A. 252 B. 792 C. 224 D. 120 **Ans:** D

24. 12টি পুস্তক থেকে 5টি কত প্রকারে বাছাই করা যায় যেখানে 2টি পুস্তক সর্বদাই অন্তর্ভুক্ত থাকবে? [৩৬তম বিসিএস]

A. 252 B. 792 C. 224 D. 120 **Ans:** D

25. 14 জন খেলোয়াড়ের মধ্যে থেকে নিদিষ্ট একজন অধিনায়ক সহ 11 জনের একটি ক্রিকেট দল কতভাবে বাছাই করা যাবে? [৩৫তম বিসিএস]

A. 728 B. 364 C. 286 D. 1001 **Ans:** C

26. 14 জন খেলোয়াড়ের মধ্য থেকে 11 জনের একটি ক্রিকেট দল কতভাবে বাছাই করা যাবে? [৩৫তম বিসিএস]

A. 728 B. 364 C. 286 D. 1001 **Ans:** C

27. 5 জন বিজ্ঞান ও 3 জন কলা অনুষদের ছাত্র থেকে 4 জনের একটি কমিটি গঠন করতে হবে যাতে অন্তত একজন বিজ্ঞান ও একজন কলার ছাত্র থাকে। কত বিভিন্ন প্রকারে এই কমিটি গঠন করা যেতে পারে?

A. ৬০ B. ৬৫ C. ৭০ D. ৭৫ **Ans:** B

28. 8 জন পুরুষ ও 6 জন মহিলা থেকে ৫ জন পুরুষ ও 3 জন মহিলা নিয়ে কতভাবে বিভিন্ন পতিপক্ষ গঠন করা যাবে?

A. 1120 B. 1080 C. 1240 D. 1190 **Ans:** A

29. 5 জন বিজ্ঞান ও 3 জন কলা বিভাগের শিক্ষার্থী থেকে অন্তত 1 জন বিজ্ঞানের শিক্ষার্থী নিয়ে কতভাবে 4 জনের কমিটি গঠিন করা যাবে?

A. 50 B. 60 C. 64 D. 70 **Ans:** D

30. 20 সদস্যবিশিষ্ট একটি ফুটবল দল হতে একজন অধিনায়ক ও একজন সহ-অধিনায়ক কতভাবে নির্বাচন করা যাবে?

A. 20 B. 190 C. 380 D. 756 **Ans:** B

31. 7 জন পুরুষ ও 6 জন মহিলা থেকে 5 জনের একটি কমিটি নির্বাচন করতে হবে। কমিটিতে অন্ততঃ 3 জন পুরুষ থাকলে, কতভাবে এটি করা যাবে?

A. 564 B. 645 C. 735 D. 756 **Ans:** D

32. 6 জন বালক ও 4 জন বালিকা থেকে 5 সদস্যবিশিষ্ট কমিটি করার কয়টি পথ আছে যেখানে ঠিক 2 জন বালিকা থাকে?

A. 60 B. 30 C. 90 D. 120 **Ans:** D

33. একটি ক্লাবের 8 জন পুরুষ ও 8 জন মহিলা সদস্য আছেন। 6 সদস্যের একটি কমিটি গঠন করতে হবে। যেখানে পুরুষ ও মহিলা সদস্য 3 জন করে থাকবে। কতভাবে এ কমিটি গঠন করা যায়?

A. 112,899 B. 3136 C. 720 D. 112 **Ans:** B

34. একটি ক্লাবের 8 জন সদস্য আছে। ক্লাবটি যদি 4 জনের কমিটি গঠন করতে চায়, তবে কয়টি ভিন্ন ভিন্ন কমিটি করা যাবে?

A. 60 B. 96 C. 80 D. 70 **Ans:** D

35. একজন পরীক্ষার্থীকে 12টি প্রশ্ন হতে ৬টির উত্তর করতে হবে। প্রথম 5টির ঠিক 4টি প্রশ্ন বাছাই করে কত প্রকারে 6টি প্রশ্ন উত্তর করা যাবে?

A. 100 B. 105 C. 120 D. 220 **Ans:** B

36. একটি পার্টিতে প্রত্যেকেই প্রত্যেকের সাথে করমর্দন করে। পার্টিতে মোট 10 জন লোক থাকলে মোট কতটি করমর্দন হবে?

A. 30 B. 40 C. 45 D. 60 **Ans:** C

37. 9 জন খেলোয়াড়ের একটি দল থেকে 6 জন খেলোয়াড় কতভাবে নির্বাচন করা যাবে?

A. 64 B. 72 C. 80 D. 84 **Ans:** D

38. এক কোম্পানী 8টি বিভিন্ন ধরনের মোমবাতি উৎপাদন করে। 3টি ভিন্ন ধরনের মোমবাতি নিয়ে ঐ কোম্পানি কত রকমের গিফ্‌ট প্যাক বাজারে সরবরাহ করতে পারে?

A. 42 B. 48 C. 56 D. 64 **Ans:** C