Dr. N.S.A.M. P.U. COLLEGE, NITTE
I PUC CET TEST – 4 (MATHEMATICS)
TOPIC: - PERMUTATIONS AND COMBINATIONS

1. **There are 5 doors to a lecture hall. The number of ways that a student can enter the hall and leave it by a different door is**

   (A) 20 **(B) 16** **(C) 19** **(D) 21**

2. **The number of possible outcomes when a coin is tossed 6 times is**

   (A) 36 **(B) 64** **(C) 12** **(D) 32**

3. **In an examination there are three multiple choice questions and each question has 4 choices. Number of ways in which a student can fail to get all answer correct is**

   (A) 11 **(B) 12** **(C) 27** **(D) 63**

4. **The number of ways in which 5 boys and 5 girls can be arranged in a row so that no two girls and no two boys are together is**

   (A) $2(5!)^2$ **(B)** $(5!)^2$ **(C) 5! 6!** **(D) 10!**

5. **The number of ways in which 10 books can be arranged in a row such that two specified books are side by side is**

   (A) $\frac{10!}{2!}$ **(B) 9!** **(C) 9! 2!** **(D)** $\frac{9!}{2!}$

6. **The number of permutations that can be made out of the letters of the word "ENTRANCE" so that the two 'N' s are always together is**

(A) $\frac{7!}{(2!)^2}$ **(B) 7!**

(C) $\frac{7!}{2!}$ **(D)** $\frac{7!}{(2!)^3}$

7. **Ten different letters of alphabet are given. Words with five letters are formed from these given letters. The number of words which have at least one letter repeated is**

(A) 69760 **(B) 30240** **(C) 99748** **(D) 99784**

8. **The number of ways in which 5 boys and 5 girls are arranged so that a girl should sit in between two boys around a table is**

(A) 5! 5! **(B) 5! 4!** **(C) 9!** **(D) 10!**

9. **The no. of ways such that 8 beads of different colour be strung in a neckless is….**

(A) 2520 **(B) 2880** **(C) 4320** **(D) 5040**

10. **There are 15 points in a plane, no three of which are in a straight line, except 6, all of which are in a straight line. The number of straight lines which can be drawn by joining them is**

(A) $^{15}C_2 - 6$ **(B)** $^{15}C_2 - {}^{6}C_2$ **(C)** $^{15}C_2 - {}^{6}C_2 - 1$ **(D)** $^{15}C_2 - {}^{6}C_2 + 1$

11. **How many straight lines can be drawn by joining 10 points on a circle?**

(A) ${}^{55}C_8 \times {}^5C_2$ **(B)** ${}^8C_3 \times {}^5C_3$

(C) 344 **(D) 45**

12. **If** ${}^{n-1}P_3 : {}^{n+1}P_3 = 5 : 12$ **then n =**

(A) 6 **(B) 7**

(C) 8 **(D) 9**

13. **If** $n_{P_r} = 30240$ and $n_{C_r} = 252$ **then the ordered pair (n, r) =**

(A) (12, 6) **(B) (10, 5)**

(C) (9, 4) **(D) (16, 7)**

14. **From 15 players the number of ways of selecting 6 so as to exclude a particular player is**

(A) ${}^{14}C_5$ **(B)** ${}^{15}C_6$

(C) ${}^{15}C_5$ **(D)** ${}^{14}C_6$

15. **The number of triangles formed by joining all the vertices is a decagon is**

(A) 100 **(B) 110**

(C) 120 **(D) 130**

16. **The number of permutations that can be formed with the letters of the word "TRIANGLE" is**

(A) $8!$ **(B)** $\frac{8!}{2!}$

(C) $\frac{8!}{3!}$ **(D)** $\frac{8!}{(2!)^2}$

17. **If** $^{15}C_{3r} = {}^{15}C_{r+3}$ **, then** r **=**

a) $\frac{3}{2}$ **b)** $\frac{1}{3}$ **c) 3** **d) 2**

18. **How many committees of 5 members can be formed from 6 gentlemen and 4 ladies?**

a) 120 **b) 252** **c)** $^{10}P_5$ **d)** $^{10}C_5$.

19. **How many even numbers can be formed by using all the digits 2, 3, 4, 5, 6?**

a) 72 **b) 120** **c) 24** **d) 48**

20. **There are three copies each of four different books. In how many ways they can be arranged in a shelf?**

a) $\frac{12!}{6^4}$ **b)** $\frac{12!}{3!\times 4!}$ **c)** $\frac{12!}{4!}$ **d)** $\frac{12!}{3!}$.