

18MAB302T – Discrete Mathematics

Assignment (Unit - II)

Part A: Two 4 Mark Questions

1. How many distinct four-digit integers can one make from the digits 1, 3, 3, 7, 7, and 8?
2. How many positive integers not exceeding 1000 are divisible by 7 or 11?
3. If ${}^nP_4 = 20 {}^nP_3$, find n.
4. If there are 5 points inside a square of side length 2, prove that two of the points are within a distance of $\sqrt{2}$ each other.
5. Which positive integers less than 30 are relatively prime to 30?

Part B: Ten Mark Questions

6. There are 250 students in an engineering college. Of these 188 have taken a course in FORTRAN, 100 have taken a course in C, and 35 have taken a course in JAVA. Further 88 have taken courses in both FORTRAN and C. 23 have taken courses in both C and JAVA and 29 have taken courses in both FORTRAN and JAVA. If 19 of these students have taken all three courses, how many of these 250 students have not taken a course in any of these three programming languages?
7. A round table conference is to be held between 10 delegates from 10 countries. In how many ways they can be seated if
 - i. Two particular delegates are always together
 - ii. Two particular delegates are on either side of the chairperson.
8. Find the integers m and n such that $28844m + 15712n = 4$.
9. Using the Euclidean algorithm to find the greatest common division of 12345 and 54321.
10. If $2^n - 1$ is a prime number, show that n is prime.