Amrita Vishwa Vidyapeetham

Tutorial Test-2

April 2022

B.Tech CSE(CYS)

Second Semester

20MAT112 NUMBER THEORY AND ALGEBRA

Time:30 Minutes   Maximum : 30 Marks

Answer All Questions

1. Find the remider upon dividing by 13 of a where $1 + \dfrac{1}{2} + \dfrac{1}{3} + \dots + \dfrac{1}{23} = \dfrac{a}{23!}$

2. Find the least nonnegative residue of $47^{2022} \pmod{113}$

3. Find $2026! - 2022! \pmod{2027}$. Note that 2027 is a prime number.

4. Find all solutions x, if they exist, to the system of equalences.

$$2x \equiv 6 \mod 14$$

$$3x \equiv 9 \mod 15$$

$$5x \equiv 20 \mod 60$$