

INTERNAL ASSESSMENT (EVEN SEMESTER 2020)

MATHEMATICS HONOURS

SEMESTER VI (RING THEORY & LINEAR ALGEBRA II)

Paper Code: SH/MTH/602/C-14

Answer any 2 from the followings :

Q.1) Determine which of the following polynomials are irreducible over \mathbb{Q} :

a) $x^5 + 9x^4 + 12x^2 + 6$

b) $x^4 + x + 1$

c) $x^4 + 3x^2 + 3$

d) $x^5 + 5x^2 + 1$

e) $x^3 + x^2 + x + 1$

Q.2) Using Eisenstein's criteria, prove that $x^2 + 2x + 6$ is irreducible over \mathbb{Z} .

Q.3) Find all prime and maximal ideals of \mathbb{Z}_{10} .