

**INTERNAL ASSESSMENT (EVEN SEMESTER 2020)**  
**MATHEMATICS HONOURS**  
**SEMESTER IV ( RING THEORY & LINEAR ALGEBRA I )**  
**Paper Code: SH/MTH/403/C-10**

Answer any 2 from the followings

**Q.1) If  $R$  is a ring and  $a \in R$ . Let  $S = \{ x \in R : ax = 0 \}$ . Show that  $S$  is a subring of  $R$ .**

**Q.2) In a ring  $R$ , an element ' $a$ ' is called an idempotent element if  $a^2 = a$ . Show that the only idempotent elements of an integral domain are  $0$  and  $1$ .**

**Q.3) If an ideal  $I$  of a ring  $R$  contains a unit, then show that  $I = R$ .**