

B.Tech IV<sup>th</sup> Semester (ECE Backlog)

Course Code: 17B11EC412

MAX. MARKS: 15

Course Name: Analogue and Digital Communication

Course Credits: 04

MAX. TIME: 1-Hrs

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question.*

- Q1. a)** Giving the drawbacks of DSB-SC, explain the need of SSB-SC. [1] [CO1,CO2]
- b)** Describe in detail the working of ring modulator for the generation of DSB-SC with supporting diagram. [3]
- Q2. a)** Draw and explain the envelope detector circuit for demodulation of AM signal. [3] [CO1,CO2]
- b)** A  $400W$  carrier is amplitude modulated to a depth of 100%. Calculate the total power in case of AM and DSB-SC technique. How much power saving is achieved for DSB-SC. If the depth of modulation is changed to 75%, then how much power is required to transmitting DSB-SC wave. [3]
- Q3. a)** What is frequency deviation and explain the Carson's rule. [1] [CO1,CO2]
- b)** Explain indirect modulation technique to generate FM signal. [2]
- c)** Determine the frequency deviation and carrier swing for a FM signal which has a resting frequency of  $105\text{ MHz}$  and whose upper frequency is  $105.7\text{ MHz}$  when modulated by a particular wave. Find the lowest frequency reached by the FM wave. [2]