

**K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22**

**(Autonomous College Affiliated to University of Mumbai)**

**End Semester Exam**

Nov – Dec 2021

(B. Tech) Program: IT

Examination: SY Semester: III (DSY)

Course Code: IUITC305 and Course Name: Communication and Logic Design

Duration: 02 Hours

Max. Marks: 45

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

|             |  | Max. Marks | CO  | BT level             |
|-------------|--|------------|-----|----------------------|
| <b>Q 1</b>  | <b>Solve any 5 questions out of six.</b>                             | 15         |     |                      |
| <b>i)</b>   | Give classification of logic gates and explain them in detail.       | 3          | CO1 | Apply                |
| <b>ii)</b>  | With the help of block diagram explain analog Communication Systems. | 3          | CO2 | Remember, Understand |
| <b>iii)</b> | Draw the waveform for AM and FM signal.                              | 3          | CO3 | Understand           |
| <b>iv)</b>  | State and explain sampling Theorem                                   | 3          | CO4 | Remember, Understand |
| <b>v)</b>   | With the help of block diagram explain FDM system.                   | 3          | CO5 | Remember, Understand |
| <b>vi)</b>  | Write a note on sky wave propagation.                                | 3          | CO6 | Understand           |
| <b>Q.2</b>  | <b>Solve any three questions out of four.</b>                        | 15         |     |                      |



|            |  |           |     |            |
|------------|--|-----------|-----|------------|
| i)         | Explain 1:4/1:8 DEMUX with the help of block diagram, logic diagram and truth table.   | 5         | CO1 | Create     |
| ii)        | Sketch pre-emphasis and de-emphasis circuits in case of FM systems. Explain its need.  | 5         | CO1 | Apply      |
| iii)       | In an Amplitude modulation system, the carrier frequency is $F_c = 100$ KHz. The maximum frequency of the signal is 5 KHz. Determine the lower and upper side bands and the band width of AM signal. | 5         | CO3 | Remember   |
| iv)        | Define electromagnetic spectrum and explain in detail.   | 5         | CO6 | Understand |
| <b>Q.3</b> | <b>Solve any three questions out of four.</b>  | <b>15</b> |     |            |
| i)         | Sketch and explain the block diagram of analog and digital communication system.   | 5         | CO2 | Remember   |
| ii)        | How a PPM signal can be generated from a PWM signal.   | 5         | CO4 | Remember   |
| iii)       | Explain the transmitter and receiver section of PCM with the help of block diagram.  | 5         | CO4 | Remember   |
| iv)        | Distinguish between ground wave, space wave and sky wave propagation.  | 5         | CO5 | Remember   |