

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

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

April - May 2021

Program: B.Tech

Examination: SY Semester: III

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
Q.1	Solve any 5 questions out of six.	15		
i)	Convert the $(153)_{10}$ and $(267)_{10}$ into Binary, Hexadecimal and Octal number system.	03	CO1	Apply
ii)	Define the following terms: Signal to Noise Ratio, Noise Factor, Equivalent Noise Temperature.	03	CO2	Remember
iii)	Define Modulation and give detail classification of modulation techniques.	03	CO3	Remember
iv)	State sampling theorem. Explain under sampling and oversampling with waveforms.	03	CO4	Remember
v)	Explain the principle of Time Division Multiplexing.	03	CO5	Remember
vi)	Write a short note on Sky wave propagation.	03	CO6	Remember

Q.2	Solve any three questions out of four.	15		
i)	Design full adder using K maps and draw truth table, logic diagram and block diagram.	05	CO1	Apply
ii)	The equation of amplitude wave is given by $s(t) = 20[1 + 0.8\cos(2\pi \times 10^3t)]\cos(4\pi \times 10^5t)$. Find the carrier power, the total sideband power and the bandwidth of AM wave.	05	CO3	Remember
iii)	Design 16:1 MUX using 4:1 MUX.	05	CO1	Apply
iv)	State and Prove the time shifting property of fourier transform.	05	CO2	Remember
Q.3	Solve any three questions out of four.	15		
i)	Explain the principle of PAM, PWM and PPM and draw waveforms for the same.	05	CO4	Remember
ii)	Explain Pulse Code Modulation technique with the help of block diagram.	05	CO4	Remember
iii)	Give classification of Shift keying methods and explain Amplitude Shift Keying in detail.	05	CO5	Remember
iv)	Distinguish between ground wave, space wave and sky wave propagation.	05	CO6	Remember