Reg. No.												

Question Paper Code	12421

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Third Semester

Computer Science and Engineering (IoT)

20ESCI301 - BASIC ELECTRONICS AND COMMUNICATION ENGINEERING

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

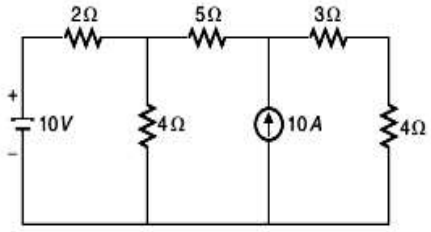
Answer ALL Questions

		Marks, K-Level, CO
1.	State Norton's theorem.	*2,K1,CO1*
2.	Define dependent source of a circuit.	*2,K1,CO1*
3.	Differentiate diffusion current and drift current.	*2,K2,CO2*
4.	Draw the equivalent diagram of an OP-AMP.	*2,K1,CO2*
5.	For a discrete Memoryless channel define channel capacity as per Shannon theorem.	*2,K1,CO3*
6.	Give the equation for finding the entropy of the binary source.	*2,K1,CO3*
7.	Define quantization.	*2,K1,CO5*
8.	What should be the minimum bandwidth required to transmit a PCM channel?	*2,K1,CO5*
9.	Define Baud.	*2,K1,CO6*
10.	What is the concept of frequency reuse?	*2,K2,CO6*

PART - B (5 × 13 = 65 Marks)

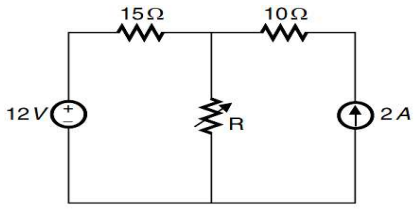
Answer ALL Questions

11. a) In the circuit shown in Fig., find the current supplied by the voltage source and the voltage across the current source by mesh analysis. *13,K2,CO1*



OR

b) In the circuit of Fig., find the value of R for maximum power transfer. Also, calculate the maximum power. *13,K2,CO1*



12. a) Derive the gain of inverting and non-inverting amplifier using op-amp. *13,K2,CO2*

OR

b) Explain the configurations and the principle of operation of BJT. *13,K2,CO2*

13. a) Explain the significance of the entropy H(X/Y) of a communication system where X is the transmitter and Y is the receiver. *13,K2,CO3*

OR

b) Explain mutual information and explain the properties of mutual information. *13,K2,CO3*

14. a) Explain Quantization process in detail and derive the expression for output signal to noise ratio of uniform quantizer. *13,K2,CO5*

OR

b) What is Sampling? Give its types along with the necessary waveforms and also explain aliasing effect in sampling. *13,K2,CO5*

15. a) With neat waveforms, phasor diagram and constellation diagram, explain in detail about PSK and 8-PSK with its applications. *13,K2,CO6*

OR

b) With neat diagram, explain in detail about multiple access techniques. *13,K2,CO6*

PART - C (1 × 15 = 15 Marks)

16. a) Explain Armstrong method of FM generation in Detail. *15,K2,CO4*

OR

b) An angle modulated wave is described by the equation V(t) = 10 Cos (2*1000000 Πt+ 10 Cos 2000 Πt). *15,K2,CO4*
Find (i) the power of the modulated signal. (ii) maximum Frequency deviation (iii) Bandwidth.