Reg. No. : | | | | | | | | | | | | |

Question Paper Code:U3B04

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Third Semester

Biomedical Engineering

21UBM304- SEMICONDUCTOR DEVICES AND CIRCUITS

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1.	Define Doping.	CO1- U
2.	Write down the expression for Diode Current.	CO1- U
3.	In a n-channel JFET, IDSS = 20 m A and VP = -6 V. Calculate the drain current when VGS = -3 V.	CO2- App
4.	Why is FET preferred as a Buffer Amplifier?	CO3- Ana
5.	What are the two types of small signal model?	CO1- U
6.	Mention the application of Class C tuned amplifier.	CO1- U
7.	Define the feedback.	CO1- U
8.	What are the types of feedback?	CO1- U
9.	Write a short notes on astable Multivibrator?	CO1- U
10.	Define clampers?	CO1- U

PART – B (5 x 16= 80Marks)

11.	(a)	(i) Explain the operation of forward biased and reverse biased PN junction diode.	CO1-U	(8)
		(ii) Briefly explain about avalanche and zener breakdown	CO1-U	(8)
		Or		
	(b)	Explain the input and output characteristics of transistor in CC configuration. Give the comparison of CB,CE,CC Configuration	CO1-U	(16)

12.	(a)	Explain the working of a P channel JFET and draw the V-I characteristics of it.	CO1-U	(16)
		Or		
	(b)	Explain in detail about construction and working principle for uni junction field effect transistor?	CO1-U	(16)
13.	(a)	Draw the small signal equivalent circuit of FET amplifier in CE connection and derive the equations for voltage gain, Input Impedance and output impedance.	CO4-E	(16)
		Or		
	(b)	Draw the small signal equivalent circuit of FET amplifier in CB connection and derive the equations for voltage gain, Input Impedance and output impedance.	CO4-E	(16)
14.	(a)	Draw the block diagram of current series feedback amplifiers and derive the expressions of input and output impedance.	CO1-U	(16)
		Or		
	(b)	Draw and explain the working of single tuned amplifiers. And also Discuss Nyquist criterion for stability of feedback amplifiers?	CO1-U	(16)
15.	(a)	Explain the construction and working of Monostable multivibrator with neat diagram?	CO1- U	(16)
		Or		
	(b)	Explain the construction and working of Sawtooth Oscillator with neat diagram?	CO1- U	(16)