Question Paper

Exam Date & Time: 14-Nov-2018 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
III SEMESTER B.S. ENGINEERING THEORY EXAMINATION-NOVEMBER 2018
ELECTRONIC DEVICES AND CIRCUITS [EC 232]

Marks: 100 **Duration: 180 mins.**

Answer 5 out of 8 questions.

Missing data, if any, may be suitably assumed.

1)		A single phase full wave rectifier using center tapped transformer of 20-0-20 V has two diodes. The current rating of diode is I_{max}=1000mA and I_{av}=700mA. Determine a) The value of load resistance that can be connected across load terminals. b) The average value of output voltage c) The peak inverse voltage of each diode d) DC load current.	(10)
	A)		
	B)	Draw the circuit of positive and negative shunt clippers without bias and briefly explain its operation with the input and output waveform	(10)
2)		For a full wave rectifier using center tapped transformer, derive a) Ripple factor b) Average load current c) RMS load current d) Efficiency of the rectifier	(10)
	A)		
	B)	Explain the working of bridge rectifier circuit Illustrate with waveform	(10)
3)		With neat circuit diagram and relevant equation explain self-bias circuit for biasing BJT. Describe the concept of load line and operating point.	(8)
	A)		
	B)	In transistor circuit, when the base current is increased from 0.32 mA to 0.48 mA the emitter current increases from 15 mA to 20 mA. Determine αac and βac values.	(4)
	C)	Explain with neat circuit diagram functioning of RC-coupled amplifier. Describe the frequency response of the amplifier.	(8)
4)		Derive an expression for efficiency of Class 'A 'power amplifier.	(10)
	A)		
	B)	Draw the circuit of class-B Push-Pull power amplifier and mention its advantages.	(10)
5)		Sketch and explain the transfer and output characteristics of	(10)

A) Enhanced n type MOSFET.

B) Explain Barkhausen criteria for sustained oscillations? Write the circuit of RC phase shift oscillator and explain its working. In an RC phase shift oscillator if the value of resistors are R1=R2=R3=150 KΩ and the value of capacitors C1=C2=C3=0.25 nF Determine the frequency of oscillation. (10)

6) A) Explain with the help of circuit diagram and expressions, explain load regulation and line regulation of voltage using Zener diode. (10)

B) Determine V_O for the network shown in **Fig Q6B.** for the input indicated. Show the steps involved. (10)

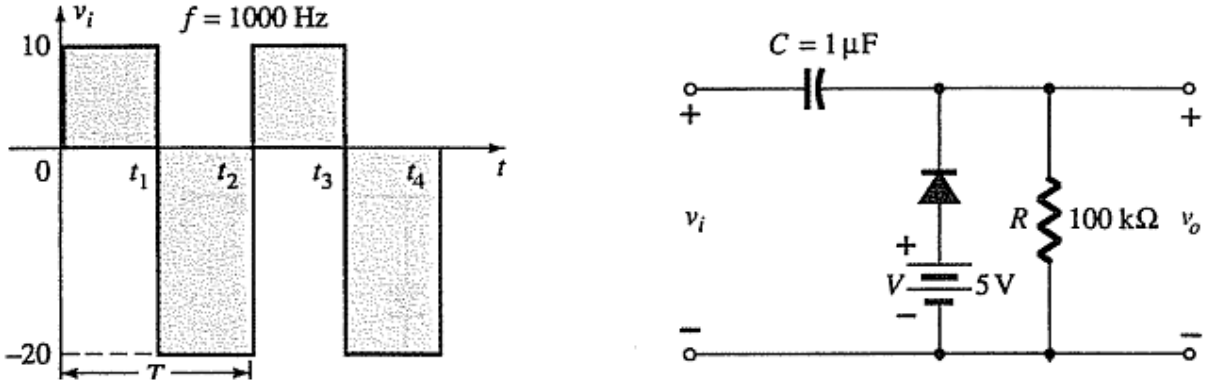

Fig Q6B

7) A) Explain with neat circuit diagram explain the working of Crystal Oscillator Mention its advantages. (10)

B) Draw the circuit of Emitter follower. What are the advantages of emitter follower? (10)

8) A) Explain the working of Transistor as a switch and highlight the biasing region of the operation (10)

B) Explain the operation of PN junction diode along with diode current equation and V-I characteristics under different bias conditions. (10)

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