Question Paper

Exam Date & Time: 07-May-2018 (09:30 AM - 12:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTER FOR APPLIED SCIENCES
III Sem. B.S.(Engg.) Degree Examination April/May 2018
07 May 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)	Design a Zener diode shunt regulated power supply with following specifications a) O/p voltage is 10V. b) Load current is 50mA c) Maximum power dissipation of 500mw and d) Input voltage is 15 ± 2V	(10)
	B)	Draw the circuit of positive and negative shunt +ve clippers without bias and briefly explain its operation with the input and output waveform.	(10)
2)	A)	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)
	B)	Explain the working of bridge rectifier circuit Illustrate with waveform	(10)
3)	A)	With neat circuit diagram and relevant equation explain self-bias circuit for biasing BJT Describe the concept of load line and operating point	(8)
	B)	In a 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 α_{ac} and β_{ac} values.	(4)
	C)	Explain with neat circuit diagram functioning of RC-coupled amplifier. Describe the frequency response of the amplifier.	(8)
4)	A)	Derive an expression for efficiency of Class 'A 'power amplifier	(10)
	B)	Draw the circuit of class-B Push-Pull power amplifier and mention its advantages	(10)

5) A) Sketch and explain the transfer and output characteristics of Enhanced n type MOSFET (10)

B) Design a Colpits oscillator for a frequency of 400MHz Draw the circuit (10)

6) A) 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)

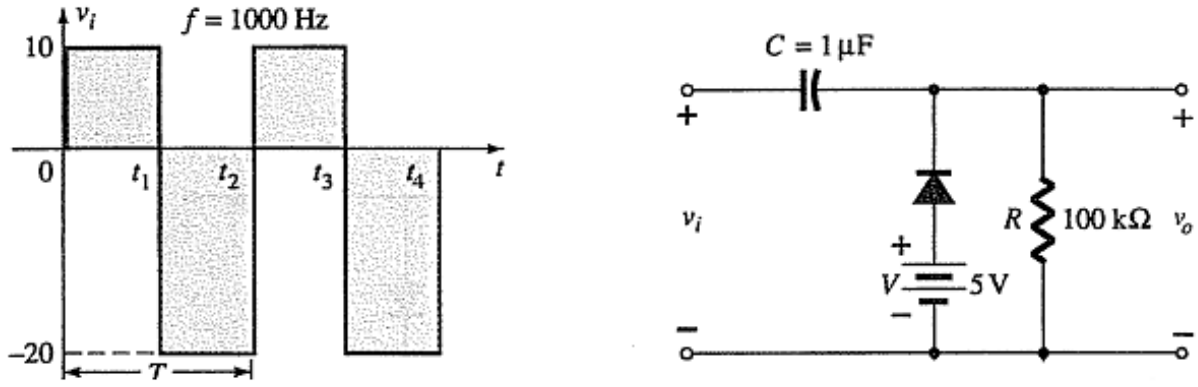

Fig Q6B

7) A) 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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