Total No. of Questions : 10] [Total No. of Printed Pages : 3

Roll No. .....

EX–304

B. E. (Third Semester) EXAMINATION, Dec., 2011

(Grading/Non-Grading System)

(Electrical & Electronics Engg. Branch)

ELECTRONIC DEVICES AND CIRCUITS – I

(EX – 304)

Time : Three Hours

Maximum Marks : { *100 (Non-Grading)* / *70 (Grading)*

Note : Attempt *one* question from each Unit. All questions carry equal marks.

Unit – I

1. (a) Give the equation for the current in a semiconductor diode. With the help of above equation, explain in detail the V-I characteristics of a semiconductor diode.

   (b) With the help of a circuit diagram explain the working of a full wave rectifier circuit and also obtain expression for efficiency of rectification.

Or

2. (a) Draw and explain the diode clamper. Show input and output waveforms and briefly explain the operation of circuit.

   (b) Explain the V-I characteristics of Zener diode and explain its working as a voltage regulator.

Unit – II

(a) Draw a schematic diagram of a transistor indicating the different currents. Arrive at the relationship among them.

(b) Explain the field effect phenomena in JFET. Also compare JFET and BJT.

Or

(a) Give construction, principle of operation and V-I characteristics of transistor.

(b) Draw and explain the transfer characteristics of JFET and also compare MOSFET and FET.

Unit – III

(a) What is the need for biasing a transistor ? What are the methods of bias stabilization ?

(b) Explain the principle of Bootstrapping and give its advantages.

Or

(a) Explain the working of RC coupled amplifier with circuit diagram and also draw frequency response curve for a RC coupled amplifier.

(b) Discuss the bandwidth of single and multistage amplifiers. What is the concept of gain bandwidth product. Describe the effect of cascading on bandwidth.

Unit – IV

(a) Draw the block diagram of an amplifier with negative feedback and discuss the effect of negative feedback on stability, noise, input resistance, output resistance and distortion.

(b) Draw the circuit diagram of RC phase shift oscillator and explain its operation.

Or

8. (a) Describe general characteristics of negative feedback amplifier and also discuss the effect of feedback on amplifier characteristics.

(b) What are the basic functional blocks of an oscillator ? With the help of a circuit diagram explain the working of a Colpitts oscillator.

Unit – V

9. (a) Give the classification of power amplifier with input and output waveforms.

(b) Explain cross-over distortion and harmonic distortion. Which method of power amplification is used to overcome the drawback of cross-over distortion ?

Or

10. (a) Explain the working of class A push pull amplifier with circuit diagram. Also list the advantages of power amplifiers.

(b) Write short notes on any *two* of the following :

(i) Design of heat sink

(ii) Single tuned and double tuned voltage amplifiers

(iii) Stability consideration

(iv) Class C tuned power amplifiers