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

Roll No. .....

EX–304(N)

B. E. (Third Semester) EXAMINATION, Feb., 2010

(New Scheme)

(Electrical & Electronics Engg. Branch)

ELECTRONIC DEVICES AND CIRCUITS – I

[EX – 304(N)]

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

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

Unit – I

1. What is semiconductor diode ? Draw the V-I characteristics for Tunnel diode, Zener diode, Schottky diode and PIN diode. Explain diffusion and transition capacitance of P-N junction diode. 20

Or

2. What is Rectifier ? Derive the expression for efficiency of the bridge full wave rectifier. Also draw the wave forms with and without filter at output and explain the working of same above rectifier. 20

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29

Unit – II

3. Derive the relative expression for α and β with BJT. Explain the V-I characteristics of FET and UJT. What are the applications and limitations of the FET and BJT ? 20

Or

4. What are the operating regions in BJT ? Explain operating regions of BJT with junction positions. Compare the BJT, FET and MOSFET. Also explain the working principle of MOSFET with two mode. 20

Unit – III

5. What do you understand by operating point in biasing ? Derive the expression for input impedance, voltage gain, current gain and output admittance using small signal low-frequency transistor amplifier circuit with *h*-parameter. 20

Or

6. Explain the following terms : 5 each
   (a) Thermal runway and thermal stability
   (b) RC coupled amplifier
   (c) Darlington amplifier
   (d) Analysis of BJT with self biasing

Unit – IV

7. Explain the LC and Wien bridge oscillator with circuit diagram, analysis and applications. Also describe the importance of Barkhausen's criteria in oscillator. 20

Or

8. Explain the following terms : 7, 7, 6
   (a) R-C phase shift oscillator
   (b) Effects of feedback on amplifier characteristics
   (c) General analysis of LC oscillators

Unit – V

9. Define the class A, B, AB and C power amplifier with curve. Explain the class A and B push-pull amplifier with analysis, circuit diagram and characteristics. 20

Or

10. Explain single tuned and double tuned voltage amplifiers. Derive the expression of output power, efficiency, cross-over distortion and harmonic distortion for class B power amplifier. 20