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Code No: R1621023 **R16** SET - 1

II B. Tech I Semester Supplementary Examinations, May - 2019
BASIC ELECTRONICS AND DEVICES
(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Define the cut in voltage of a diode. (2M)
   b) Draw the V-I characteristics of a tunnel diode (3M)
   c) Mention different types of filters used. (2M)
   d) Write the relation between α,β andγ. (2M)
   e) Mention the difference in operation of a depletion mode and enhancement mode MOSFET. (2M)
   f) Mention the effects of feed back. (3M)

PART -B

2. a) Derive the drift and diffusion currents of a semiconductor (7M)
   b) Describe the Fermi level in intrinsic and extrinsic semiconductors (7M)

3. a) Write a short notes on varactor diode and its applications. (7M)
   b) The current through silicon diode is I_f =50 mA in a forward bias of V_f =0.6 V. Calculate the static resistance. (7M)

4. a) Derive an expression for ripple factor for a full-wave rectifier with capacitor filter (7M)
   b) A diode whose internal resistance is 20ohms is to supply power to a load of 1 KΩ from 110 V (rms) source of supply. Calculate i). Peak load current ii). DC load current iii). AC load current iv). DC diode voltage v). Total input power vi). Peak Inverse voltage vii). Efficiency for full wave rectifier (7M)

5. a) Determine the h-parameters for common emitter configuration from the characteristic curves (7M)
   b) Derive the expressions for Z_i, Z_o , A_v and A_{vs} for CE amplifier (7M)

6. a) Explain MOSFET in enhancement and depletion mode with the required figures. (10M)
   b) Differentiate between BJT and JFET (4M)

7. a) Write short notes on crystal oscillator. (4M)
   b) Draw the circuit of a RC phase shift oscillator and derive the condition for the frequency of oscillation (10M)

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