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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year I Semester Examinations, March - 2017
ELECTRONIC DEVICES AND CIRCUITS
(Common to EEE, ECE, CSE, EIE, IT, MCT)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

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1.a) Explain the breakdown occur in PN junction diode in detail.
 b) Derive the expression for transition capacitance of a diode.
 c) Explain the operation of PN junction diode with V-I characteristics. [5+5+5]

2.a) A sinusoidal voltage whose $V_m=28V$ is applied to half-wave rectifier. The diode may be considered to be ideal and $R_L=1.6$ KΩ is connected as load. Find out peak value of current, RMS value of Current, DC value of current and Ripple factor.
 b) Define Rectifier. Draw the construction of bridge Rectifier with circuit diagram.
 c) Explain the necessity of filter circuit after the rectifier circuit. [5+5+5]

3.a) Explain input and output characteristics of transistor in CE configuration.
 b) Explain how transistor work as an amplifier?
 c) Define early effect. Why it is called as base width modulation. [5+5+5]

4.a) Define thermal runaway. Explain the methods to avoid thermal runaway in BJT.
 b) Draw the circuit diagram of a collector to base bias circuit of CE amplifier and derive expression for Stability factor. [7+8]

5.a) Calculate the voltage gain, input impedance, output impedance, current gain of a CE amplifier. If $R_L = 12k$ ohm, $h_{ie} = 3.1k$ ohm, $h_{re} = 6.5\times10^{-4}$, $h_{fe} = 80$, $h_{oe} = 24\mu A/V$.
 b) Compare CE, CC and CB configurations. [8+7]

6.a) Describe the construction and working principle of Depletion mode MOSFET and draw its characteristics.
 b) Discuss in detail the small signal model of FET with circuit diagrams. [8+7]

7.a) Explain the different biasing techniques of JFET.
 b) Why FET is called as VVR? Justify. [8+7]

8.a) Explain the V-I characteristics of SCR, and define latch current, breakdown voltage.
 b) Define varactor diode. Explain the operation of varactor diode with its equivalent circuit and mention its applications. [7+8]

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