R09

Code: 9A04301

B.Tech II Year I Semester (R09) Supplementary Examinations June 2016
ELECTRONIC DEVICES & CIRCUITS
(Common to EIE, E.Con.E, ECE, ECC, CSS, IT CSE, EEE & MCT)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Explain how does the reverse saturation current of diode varies with temperature.
   (b) Draw the energy band diagram of p-n diode for no bias, forward bias and reverse bias and explain.

2 (a) Discuss the importance of PIV in rectifier circuits.
   (b) Derive the ripple factor expression for FWR with inductor filter.

3 (a) With neat diagram explain the various current components in a pnp transistor.
   (b) Discuss in brief about the different configurations of BJT.

4 (a) Explain the simpler way of drawing dc load line.
   (b) Prove that stability factor $S'' = \dfrac{(I_{C1} - I_{C01})S_2}{\beta_1(\beta_2 + 1)}$

   Where S_2 is the value of stabilizing factor S when $\beta = \beta2$.

5 (a) Briefly explain the operation of n-channel enhancement MOSFET and draw its characteristics.
   (b) For n-channel JFET, $V_{DS} = 10$ V and V_{GS} is changed from 2V to 3V and drain current changed from -4 mA to 2.0 nA. Find r_d and μ if V_{DS} changes from 8 to 12V and I_D changes from 3.0 to 3.2 mA at $V_{GS}=2.5$V

6 (a) Explain the small signal equivalent circuit of common gate amplifier.
   (b) In CG amplifier, $R_D = 4$ kΩ, $R_S = 1$ kΩ, $r_d = 35$ kΩ and $g_m = 1.43 \times 10^{-3}$ mho. Find the voltage gain, impedance and output impedance.

7 (a) Draw the small signal hybrid model of CB amplifier and derive the expressions for its A_i, A_v, R_i and R_o.
   (b) What are the hybrid or h parameters? Why are they so called?

8 (a) Define gate power dissipations and explain its importance in SCR.
   (b) Draw and explain the equivalent circuit of UJT.

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