

Code: R7100207

**R07**

B.Tech I Year (R07) Supplementary Examinations December/January 2015/2016

**BASIC ELECTRONIC DEVICES & CIRCUITS**

(Electrical and Electronics Engineering)

(For 2008 regular admitted batch only)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions  
All questions carry equal marks

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- 1 (a) Explain the electrostatic deflection in a cathode ray tube.  
(b) The distance between the plates of a parallel plate capacitor is 1 cm. If a direct voltage of 1000 volts is applied between them, how long will it take for an electron to reach the positive plate?
- 2 (a) Draw the Piecewise linear equivalent circuit of diode and explain it.  
(b) What are the two basic types of capacitance associated with PN junction? Explain them. Derive expressions for them.
- 3 (a) Explain the working of a  $\pi$  – filter for full wave rectifier.  
(b) A full wave rectifier produces an rms voltage of 10 V from a 50 Hz line source and feeds a resistive load of 1,100  $\Omega$ . If the filter uses a capacitance of  $C = 50 \mu\text{F}$ , find dc voltage, voltage regulation and ripple output voltage.
- 4 (a) Explain about current components in transistor.  
(b) Sketch and explain the basic structure of an N – channel JFET. Show the circuit symbol for the JFET.
- 5 (a) NPN transistor in CE mode  $V_{CC} = 10 \text{ V}$ ,  $R_C = 2 \text{ k}\Omega$  and  $R_B = 100 \text{ k}\Omega$ , calculate of quiescent point and S for CE transistor with collector to base bias.  
(b) Draw fixed biasing circuit of NPN transistor and explain it.
- 6 (a) If  $h_{ie} = 2 \text{ k}\Omega$ ,  $h_{fe} = 80$ ,  $h_{re} = 10^{-4}$  and  $h_{oe} = 10^{-5} \text{ mho}$   $R_S = R_L = 1 \text{ k}\Omega$ , Calculate: (i)  $A_i$ . (ii)  $A_v$ . (iii)  $R_i$ .  
(b) How will you determine h – parameters from the characteristics of CE configuration? Explain.
- 7 Explain the effect of negative feedback on the following:  
(a) Input impedance.  
(b) Output impedance.  
(c) Voltage gain.  
(d) Bandwidth.
- 8 (a) Draw the circuit for Wein bridge oscillator and hence obtain its condition of sustained oscillations.  
(b) Why do we use a crystal in an oscillator circuit obtain the expression of the impedance and show its plot w.r.t the frequency?

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