

Code No: R21026

**R10****SET - 1****II B. Tech I Semester Supplementary Examinations, May/June - 2017****ELECTRONIC DEVICES AND CIRCUITS**

(Com. to EEE, ECE, EIE, ECC, CSE, IT, BME)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks  
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1. a) Explain about in magnetic field.  
b) A charged particle having charge thrice that of an electron and mass twice that of an electron is accelerated through a potential difference of 50V before it enters a uniform magnetic field flux density of  $0.02 \text{ Wb/m}^2$  at an angle of  $25^\circ$  with field.  
Calculate i). The velocity of the charged particle before entering the field.  
ii). Radius of the helical path  
iii) Time of revolution. (5M+10M)
2. a) In a p-type semiconductor, the Fermi level is  $0.25 \text{ eV}$  above the valence band at room temperature of  $300^\circ\text{K}$ . Determine the new position of Fermi level when the temperatures are i)  $400^\circ\text{K}$  ii)  $600^\circ\text{K}$   
b) Define Drift and diffusion currents in semiconductor. (8M+7M)
3. a) Explain the principle behind the Varactor diode and list out its applications.  
b) Explain the Construction of a PIN diode and give the applications of PIN diode. (7M+8M)
4. a) Explain about series and shunt voltage regulators.  
b) Derive an expression for the ripple factor in a full wave rectifier using inductor filter. (7M+8M)
5. a) A transistor has  $I_B = 100\mu\text{A}$  and  $I_C = 2\mu\text{A}$  Find  
i)  $\beta$  of the transistor ii)  $\alpha$  of the transistor iii) Emitter current  $I_E$   
iv) if  $I_B$  changes by  $+25\mu\text{A}$  and  $I_C$  changes by  $+0.6\text{mA}$ . Find the new value of  $\beta$ ?  
b) Explain about Photo Transistor. (5M+10M)
6. a) Explain the construction and working of n-channel JFET?  
b) Briefly describe some applications of JFET. (10M+5M)
7. a) Explain in detail about Stabilization factors.  
b) Explain about Thermistor and Sensistor compensation. (7M+8M)
8. a) Explain about Conversion formulas for the parameters of three transistor configuration  
b) Explain in detail about Measurement of h-parameters (7M+8M)