Enroll. No. _____

SILVER OAK COLLEGE OF ENGINEERING & TECHNOLOGY

ADITYA SILVER OAK INSTITUTE OF TECHNOLOGY

BE - SEMESTER–I • MID SEMESTER-II EXAMINATION – WINTER 2018

SUBJECT: PHYSICS (3110018) (SOFT BRANCHES - CE/IT)

DATE: 19-12-2018 TIME: 02:00 pm to 03:30 pm TOTAL MARKS: 40

Instructions:
1. Q. 1 is compulsory.
2. Figures to the right indicate full marks.
3. Assume suitable data if required.

Q.1	(a)	State different means of losses in solar cell and give their remedies.	[03]
	(b)	In a p type semiconductor at T=300K, Fermi level lies 0.4 eV above valence band. If the concentration of acceptor atoms is doubled, find new position of Fermi level.	[03]
	(c)	Draw and explain energy band diagram for Metal semiconductor junction (Schottky diode).	[04]
Q.2	(a)	Explain Hall effect. Derive expression for hall mobility.	[06]
	(b)	Explain Fermi golden rule.	[05]
	(c)	The hall coefficient of a specimen of a doped Silicon is found to be 3.66×10^{-1} m^3/C. Resistivity of the specimen is 8.93×10^3 ohm m. Determine mobility of the charge carriers.	[04]

OR

Q.2	(a)	Derive an expression for concentration of majority charge carriers in n type semiconductor.	[06]
	(b)	State mass action law for extrinsic and intrinsic semiconductors.	[05]
	(c)	For Silicon, the intrinsic concentration is approximately 10^{16} carriers/m^3. If an impurity concentration of 10^{22} donor atoms/m^3 is doped, determine (a)electron concentration (b) hole concentration	[04]
Q.3	(a)	Explain with diagram variation of fermi energy level with temperature in n-type and p-type semiconductor.	[06]
	(b)	Explain joint density of states for photon.	[05]
	(c)	What is the difference between ohmic and Schottky junction?	[04]

OR

Q.3	(a)	Draw and explain energy level diagram for p n junction diode in forward and reverse bias.	[06]
	(b)	Explain principle and working of photovoltaic effect with diagram.	[05]
	(c)	Differentiate between drift and diffusion current. Write expression of current density for both.	[04]