B.Sc. Sem-5 (New CBCS)
Physics Paper-504 Paper Code-
(Power electronics, Opto electronics, Solar Physics)
Time : 2:30 hours   *Paper code'= 21481*   Total Marks : 70

Instructions: (1) Symbols have their usual meaning.
(2) Figures on right hand side show marks of that question.

1.	Derive equation for maximum collector efficiency of the power amplifier. Draw the circuit diagram of Class B push-pull power amplifier and show that maximum collector efficiency of Class B push-pull power amplifier is more than 50%.	[14]

OR

1. (a)	Draw the circuit diagram of transformer coupled class-A amplifier and obtain an equation for maximum collector efficiency.	[10]
(b)	Draw the circuit diagram of series-fed class-A amplifier.	[04]
2.	Explain in detail the action of a Zener voltage regulator with a neat diagram.	[14]

OR

2. (a)	Explain in detail transistorized series voltage regulator circuit.	[07]
(b)	Explain in detail transistorized shunt voltage regulator circuit.	[07]
3.	What is modulation index in amplitude modulation. Explain the terms side bands and waveforms of modulating signal, with figures.	[14]

OR

3. (a)	Explain different cases of modulated waves with various degrees of modulation in amplitude modulation.	[07]
(b)	Prove that only one third of the total power of modulated wave is contained in the two side bands in amplitude modulation.	[07]
4.	What is photovoltaic effect? Describe the operation, characteristics, fill factor and efficiency of Solar cell.	[14]

OR

4.	Write short notes on : (1) Photo Diode. (2) Light Dependent Resistor (LDR).	[14]
5.	What is solar pond? Describe the construction and working of solar pond. Write its applications.	[14]

OR

5.	Write in detail about flat plate solar collector.	[14]