

**B. Sc. (Physics) Semester – V**

**Paper – 505 :Power Electronics and Solar Energy**

Code : 4298

**MARKS: 70**

**TIME:2:30HOURS**

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

1. (a) What do you understand by Class A , Class B and Class C power amplifiers ? [07]  
(b) Derive an expression for collector efficiency of power amplifiers. [07]
- OR**
1. Write in detail about transformer coupled Class A amplifier. [14]
2. (a) Describe the operation of Zener Diode as a voltage regulator with a neat diagram. [11]  
(b) Write the differences between unregulated and regulated power supply. [03]
- OR**
2. (a) Write short notes on : [10]  
(1) Ripple and Voltage regulation.  
(2) Op-Amp series regulator.  
(b) Write in brief about Adjustable positive voltage regulators. [04]
3. Write in detail about solar angles . [14]
- OR**
- 3.(a) Write notes on solar constant. [07]  
(b) Write notes on solar time. [07]
4. What is solar pond ? Describe the construction and working of solar pond. Write its applications. [14]
- OR**
4. Describe the basic design of Flat-Plate collector. Derive equation for energy balance and collector efficiency. [14]
- 5.(a) Explain the transformer coupled Push – Pull circuit with a neat diagram. [10]  
(b) Write in short about thermal run- away and need for heat sink. [04]
- OR**
5. Show that maximum collector efficiency of Series-Fed Class A power amplifier is 25% [14]