



**Power Electronics - II**  
**(New) (1290)**

**P. Pages : 2**

**Time : Three Hours**

**Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Assume suitable data if necessary.
5. Use of non - programmable calculator is allowed.
6. Attempt **any two** from each question.

**1. Any Two.**

- a) Discuss the match between motor and load. Also derive relation for  $T_{em}$  for system of coupling through gear. **10**
- b) Explain the working of adjustable speed drive in an air conditioning system. Also state advantages and disadvantages of line frequency controlled converters with respect to switch mode converts for dc motor drive application. **10**
- c) Describe the working of D.C. Motor drive with proper block diagram Also explain the effect of discontinuous armature current in DC motor drives. **10**

**2. Attempt any two.**

- a) With the help of block diagram explain adjustable speed control of PWM - VSI drives ? Explain the different control loops ? **10**
- b) With the help of phasor diagram & graph explain voltage boost required at low frequency for speed control in induction motor. **10**
- c) Explain effect of non sinusoidal excitation on induction motor w.r.t. torque pulsations and harmonic motor currents **10**

**3. Attempt any two.**

- a) Explain the need for a drive circuit with unipolar as well as bi-polar output 'Draw circuit diagram & explain operation of d.c coupled drive circuit with bipolar output. **10**
- b) State factors that decide the topology of drive circuit. Draw circuit & explain open emitter BJT drive circuit. Also give its advantages. **10**
- c) Explain in details the thyristor gate drive circuit for bridge type convertors. **10**

**4. Attempt any two.**

- a) Explain different types of snubber circuits. Also explain the effect of adding snubber legislature for thyristor. **10**
- b) Draw circuit diagram and explain working of snubber for 3- $\phi$  line commuted converters. Derive relation of Cs & Rs. **10**
- c) Write short note on GTO snubber consideration. **10**

- 5.** a) Draw circuit diagram & explain induction heating application. **10**
- b) Explain different current mode control schemes. Also explain what do you mean by active shaping of input current. **10**
- c) Draw circuit diagram & explain with waveforms, 12 pulse converter for HVDC transmission. **10**

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