

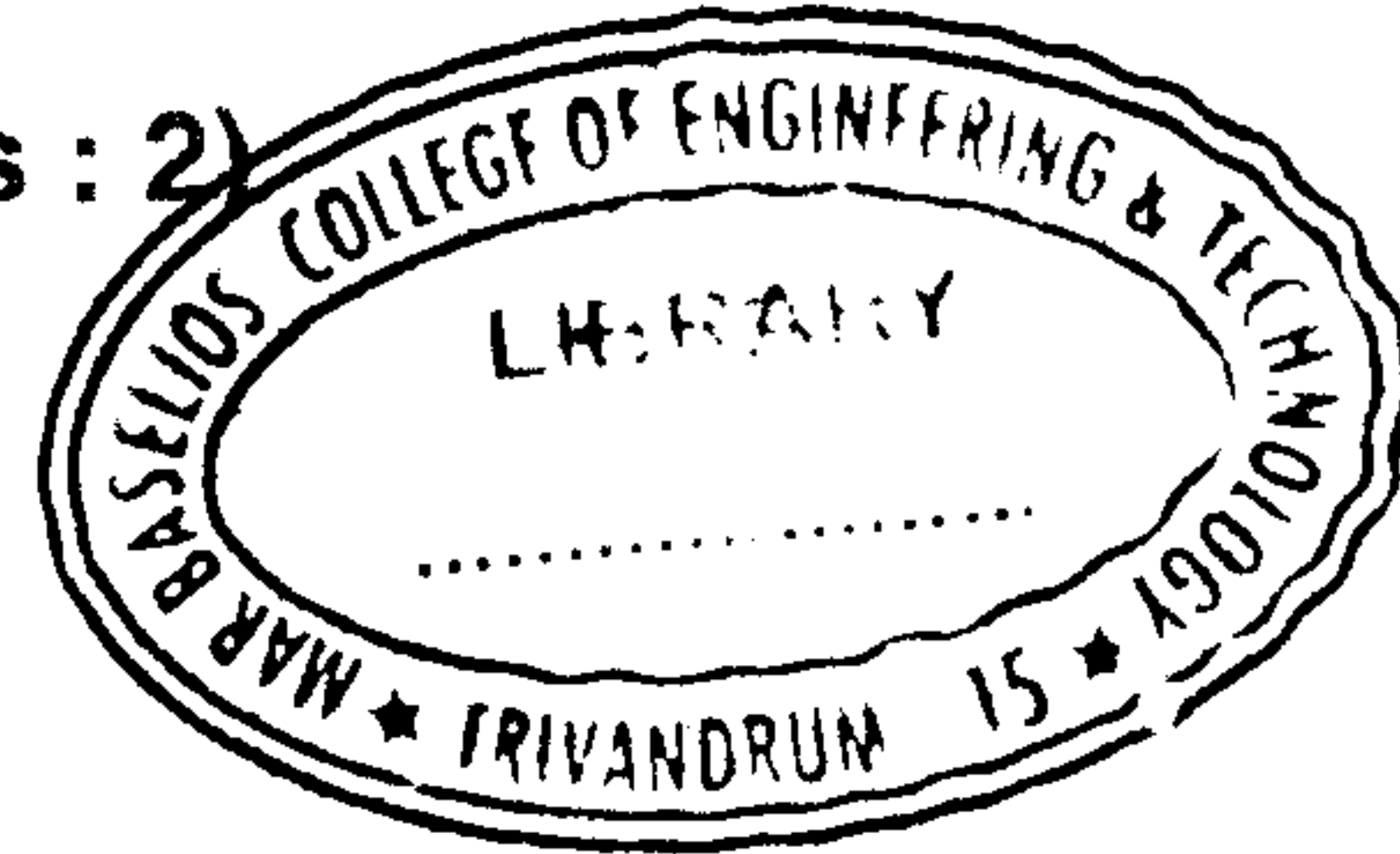


(Pages : 2)

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Reg. No. : .....

Name : .....



**Eighth Semester B.Tech. Degree Examination, December 2018  
(2013 Scheme)**

**13.801 : ELECTRICAL DRIVES AND CONTROL (T)**

Time : 3 Hours

Max. Marks : 100

**PART – A**

Answer **all** questions. **Each** question carries **2** marks.

1. Compare between the lap winding and wave winding in a DC machine.
2. What is the main advantage of a DC series motor ?
3. Name the two types of 3-phase induction motors.
4. Compare between the power transistor and power MOSFET in terms of switching losses and conduction losses.
5. For a step-down chopper, if the input voltage is 30V dc and output voltage is 10V dc, find the duty ratio.
6. Draw the output voltage of a 1-phase full-wave bridge rectifier with R load for a firing angle of  $45^\circ$ .
7. What is the advantage of dual converter ?
8. Draw the schematic diagram of a 1-phase half-bridge inverter.
9. Define modulation index in a sine-PWM inverter and what is its importance ?
10. Name two speed control methods of 3-phase induction motor.

**PART – B**

Answer **any one full** question from **each** Module.

**Module – 1**

11. a) Explain the principle of operation of a DC motor. 12
- b) A6-pole, lap-connected DC generator has a total of 650 conductors. The flux per pole is 0.05Wb. Calculate the speed at which the armature is to be driven to generate an EMF of 220V. 8

OR

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F – 2919



12. a) Explain the principle of operation of 3-phase induction motor. 10  
b) Explain the speed Vs armature current and torque Vs speed characteristics of a dc series motor. 10

**Module – 2**

13. a) Explain the switching characteristics of power transistor. 12  
b) Explain the working of a step-up chopper. 8

OR

14. a) Explain the working of a four quadrant chopper. 12  
b) With a neat circuit diagram explain the working of a drive circuit for power MOSFET. 8

**Module – 3**

15. Explain the working of a 1-phase half-wave controlled rectifier for R and RL load at a firing angle of  $45^\circ$  with necessary waveforms. 20

OR

16. Explain the four quadrant operation with a dual converter. 20

**Module – 4**

17. Explain various pulse width modulation techniques for the voltage control of inverters. 20

OR

18. With necessary block diagrams explain the working of ON line and OFF line UPS. 20

