

Hall Ticket Number :

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R-11 / R-13

Code: 1G287

IV B.Tech. II Semester Supplementary Examinations December 2017

Energy Auditing and Demand Side Management

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks each**)

1. Explain in detail about how to conserve electrical energy and explain some of the means to conserve energy.
2. Explain in detail about energy conservation schemes.
3. Explain the constructional details of energy efficient motors.
4. What is the role of power factor on system performance? Explain the effects of harmonics on power factor.
5. Write short notes on:
 - (a) Good lighting system design.
 - (b) Lighting energy audit.
 - (c) Pyrometers.
6. Explain in detail about:
 - (a) Payback analysis.
 - (b) Depreciation.
- 7 a) Briefly discuss about multi-utility power exchange model.
b) What is demand side management? Explain the benefits of demand side management.
8. a) Write short notes on load priority technique.
b) Explain the method of valley filling.

Hall Ticket Number :

R-11 / R-13

Code: 1G281

IV B.Tech. II Semester Supplementary Examinations December 2017

Power Semiconductor Drives

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks each**)

1. a) Draw and explain the power circuit of semi converter feeding a separately excited dc motor. Explain with typical voltage and current waveforms, the operation in continuous and discontinuous armature current modes. 9M
b) Draw the equivalent circuit of a separately excited dc motor and derive the expressions for motor torque and armature voltage. 5M
2. a) A 80 kW, 440 V, 800 rpm d.c. motor is operating at 600 rpm and developing 75% of rated torque is controlled by 3 – , six pulse thyristor converter. If the back e.m.f at rated speed is 410 V, determine the firing angle of the converter. The input to the converter is 3 – , 415 V, 50 Hz a.c.supply. 7M
b) Draw the power circuit diagram of a three phase full converter d.c. separately excited motor drive. Also sketch and explain the output voltage and output current waveforms for 60° and 90° firing angles. 7M
3. a) Explain briefly regenerative braking, dynamic braking and plugging methods for a d.c motor. 7M
b) Discuss the operation of different modes for a dual converter fed separately excited d.c motor. 7M
4. a) Draw the circuit diagram and explain the operation of chopper fed d.c. series motor. Also derive the expressions for I_{max} and I_{min} for continuous armature current. 7M
b) A d.c. chopper is used to control a d.c shunt motor. The supply voltage to the chopper is 220 V. The on time and off time of the chopper are 10 msec and 12 msec respectively. Assuming continuous conduction of the motor current and neglecting the armature inductance, determine the average load current when the motor runs at a speed of 140.6 rad/sec and has a voltage constant of 0.495. 7M
5. a) Explain the speed control of an induction motor by ac voltage controllers with necessary diagrams. 9M
b) Draw the torque speed characteristics of stator voltage controlled induction motor drive at different voltages. Which type of loads can be handled by stator voltage control? 5M
6. a) Discuss the variable frequency control method of speed control for an induction motor below rated speed and above rated speed with relevant diagrams. 8M
b) Compare VSI and CSI fed induction motor drives. 6M
7. a) Explain in brief about the speed control of induction motor from rotor side. 6M
b) Draw and explain the operation of static Scherbius drive with relevant diagrams. 8M
8. a) Explain the operation of self-controlled synchronous motor drive fed by VSI with relevant diagrams. 7M
b) Explain the load commutated inverter fed synchronous motor with necessary diagrams. 7M

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R11/R13

Code: 1G282

IV B.Tech. II Semester Supplementary Examinations December 2017

Distribution of Electrical Power

(Electrical & Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks** each)

1. a) Define the following terms:
 - i. Demand factor
 - ii. Connected load
 - iii. Contribution factor
 - iv. Coincidence factor7M
- b) Discuss the Classification of loads and their characteristics? 7M
2. a) Discuss the design considerations of Loop types of Primary Distribution Systems? 7M
- b) Explain the design practice of secondary Distribution Systems? 7M
3. a) Discuss the manual methods of solution for radial networks? 7M
- b) Prove that the power loss due to load currents in the conductors of 1- lateral ungrounded neutral case is two times larger than one in the equivalent 3-lateral? 7M
4. Explain the Principle of operation of fuses, circuit reclosers, line sectionalizer and circuit breakers with neat sketch? 14M
5. a) Explain the role of shunt and series capacitors in power factor correction? 7M
- b) Discuss the procedure to determine the optimum capacitor allocation? 7M
6. a) Describe the operation of AVB/AVR with neat diagram? 7M
- b) Explain the concept of line drop compensation. 7M
7. a) What is meant by load fore casting? Explain the various factors affecting the load forecasting? 7M
- b) Discuss the different factors affecting system Planning-Load forecasting 7M
8. a) Define the following terms:
 - i. Communication in distribution system
 - ii. Distribution management7M
- b) What is DMS? Explain its functionalities? 7M
