Hall Ticket Number :										

R11/R13

Code: 1G282

IV B.Tech. II Semester Regular & Supplementary Examinations April 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)

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1. a) Derive the relation between load factor and loss factor? 7M
   b) Discuss the Classification of loads and their characteristics? 7M

2. a) Discuss the design considerations of Radial Primary Distribution Systems? 7M
   b) Explain the factors effecting design practice of secondary Distribution Systems? 7M

3. a) Derive the expression for Voltage drop and Power loss for Uniformly distributed load? 7M
   b) Discuss the load flow studies of power systems? 7M

4. a) Explain the different types of faults and procedure for fault calculation in system? 7M
   b) What are the objectives of Distribution system protection? Explain 7M

5. a) Define power factor and the various causes of low power factor? 7M
   b) Explain the procedure to determine the optimum capacitor allocation? 7M

6. a) What are the various methods adapted for voltage control? 7M
   b) Define the following terms:
      i. Power capacitor
      ii. Shunt capacitor
      iii. Series capacitor 7M

7. a) What is meant by load fore casting? Explain the various factors affecting the load forecasting? 7M
   b) Discuss the present Techniques for distribution System Planning? 7M

8. a) Explain the necessity of distribution automation and its features? 7M
   b) Define the following terms:
      i. Distribution automation
      ii. Management functionalities 7M

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Hall Ticket Number :										

R11/R13

Code: 1G285

IV B.Tech. II Semester Regular & Supplementary Examinations April 2017

Principles of Power Quality

(Electrical & Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any ***five*** questions

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

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1.		Briefly explain the long duration voltage variations, short voltage variations, voltage imbalance and voltage fluctuations	14M
2.		Discuss the motor starting sags and utility system fault clearing issues.	14M
3.	a)	What are the utility system lighting protection	6M
	b)	Explain how the isolation transformers and low pass filters are useful for over voltage protection	8M
4.	a)	Define the terms harmonic distortion and harmonic indices	8M
	b)	Describe the power system qualities under non sinusoidal conditions for harmonics	6M
5.	a)	Explain the device for controlling g harmonic distortion	7M
	b)	Write short notes on harmonic distortion evaluation procedure	7M
6.	a)	Explain the working of various devices for voltage regulation	7M
	b)	Write short notes on principles of regulating voltage	7M
7.		Explain the terms harmonic indices and power quality contracts	14M
8.		Explain about various power quality measurement equipment	14M

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Hall Ticket Number :										

R11/R13

Code: 1G287

IV B.Tech. II Semester Regular & Supplementary Examinations April 2017

Energy Auditing and Demand side Management

(Electrical & Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any ***five*** questions

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

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1.	a)	Give in detail about energy scenario in India and in abroad.	7M
	b)	Briefly explain about Codes, standards and Legislation	7M
2.		What is energy audit? Explain the different types of audits in detail by giving examples.	14M
3.	a)	With a neat sketch, explain the construction of variable speed motor. Draw the characteristics.	10M
	b)	List out the factors which effects loss distribution.	4M
4.	a)	What is the role of power factor on system performance?	7M
	b)	Does the location of capacitors has an impact on improving the power factor? If "yes" justify the statement.	7M
5.	a)	Explain the procedure followed, for auditing lighting energy.	7M
	b)	With a neat sketch, explain how a tongue tester works. Give some of its applications.	7M
6.	a)	Explain how to develop cash flow models.	7M
	b)	For a system, salvage value = 0, life of equipment = 5 years, first cost = 1,50,000. Calculate the depreciation rate using sum of year's digits method.	7M
7.	a)	What is DSM? Explain about the concept of 'time of day pricing'	7M
	b)	Enumerate the different techniques of demand side management.	7M
8.	a)	Define load management and explain its importance.	5M
	b)	Compare peak clipping, peak shifting and valley filling.	9M

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Hall Ticket Number :										

R11/R13

Code: 1G281

IV B.Tech. II Semester Regular & Supplementary Examinations April 2017

Power Semiconductor Drives

(Electrical & Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any ***five*** questions

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

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1. a) Explain the operation of single phase semi-converter fed separately excited d.c. motor drive with necessary diagrams. 7M

   b) A 220 Volts, 960rpm, 13 Amps separately excited d.c. motor has armature resistance of 2 ohms. It is fed from a single-phase half controlled rectifier with an a.c. source of 230 volts, 50HZ. Assuming continuous conduction, Calculate motor torque for $\alpha = 60^0$ and speed 600 rpm. 7M

2. a) Derive the output voltage expression and Speed Torque characteristics for a three phase fully controlled rectifier fed DC separately excited motor with neat circuit diagram and wave forms 10M

   b) Discuss the reason for the neglecting of discontinuous conduction in three phase rectifier fed motors? 4M

3. a) Enumerate the advantages of electric braking over mechanical braking of dc motor 4M

   b) A 220V 200A, 800 rpm D.C Separately excited motor has an armature resistance of 0.06 ohms. The motor armature is fed from a variable source with an internal resistance of 0.04 ohms.

      i. Calculate internal voltage of the variable voltage source when the motor is operating in regenerative breaking at 80% of the rated motor torque and 600 rpm.

      ii. If the motor is operated under dynamic breaking at twice the rated torque and 800 rpm then calculate the value of breaking current and resistor by assuming linear magnetic circuit. 10M

4 a) Define the energy storage interval of a type B chopper fed dc motor? 4M

   b) A 230V, 500 rpm, 4.1A armature resistance and inductances are 7.56 Ω and 55.0 mH respectively of 1HP motor is driven with armature supplied from class A chopper and a 240V DC source. The field current is held constant at the value that gives rated operation on 230V the chopping frequency is constant at 50 Hz .The minimum load torque is 5 N-m

      (i) Determine the value of 't_{on}' for minimum load torque of 500 rpm

      (ii) Determine whether 'I_a' continuous for the conditions of (i)

      (iii) Determine the minimum value of 't_{on}' for which the current is continuous at 500 m and corresponding coupling torque 10M

5. a) Explain with relevant equations and circuit diagrams of equallent circuit of an Induction Motor ? 4M

   b) Explain with neat circuit diagram about single phase & three phase AC Voltage controller fed Induction motor 10M

6. A 440 V, 50 Hz,6-pole , star connected wound rotor motor has following parameters:

   Rs = 0.5 ohm, Rr^1 = 0.4 ohm, Xs = Xr^1 =1.2 ohm, Xm = 50 Ohm

   Stator to rotor turns ratio is 3.5.

   Motor is controlled by static rotor resistance control. External resistance is chosen such that the breakdown torque is produced at stand still for a duty ratio of zero. Calculate the value of external resistance. How duty ratio should be varied with speed so that motor accelerated at maximum torque. 14M

7. a) Brief the differences between Static Scherbius Drive and Static Krammers Drive 4M

   b) Explain in detail about Static Krammers Drive with circuit diagram, Equations and Speed – torque characteristics 10M

8. Describe the open-loop and closed loop methods of speed control of a synchronous motor using VSI 14M

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