B.Tech. (Electrical Engineering) 8th Semester
(G-Scheme) Examination, July–2022
SOLAR THERMAL APPLICATIONS
Paper– OEC-EE-402-G / OEC-EE-406-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt five questions in all, selecting one question from each unit. **Question Number 1 is compulsory.** All questions carry equal marks.*

1. (a) What is the indirect form of solar energy? 2.5×6

(b) Define angle of incidence, surface azimuth angle.

(c) Write advantage and disadvantage of concentrating collector.

(d) Under what circumstances storage of energy become essential?

(e) What is purpose of double layer of glazing in green house?

(f) Define concentration ratio and collector efficiency.

Unit-I

2. Explain in detail various instruments used for measurement of solar radiation 15

3. Derive empirical equations for estimating availability of solar radiation 15

Unit-II

4. With the help of schematic diagram explain working of cylindrical parabolic collector and compound parabolic collector 15

5. Explain the effect of various parameters on the performance of solar collector. 15

Unit-III

6. Describe Sensible heat storage technique in thermal energy storage system. 15

7. On what basis energy storage systems are classified? Can energy stored in one form be stored in other form? 15

Unit-IV

8. Write short notes on

   (a) Performance of conventional air heater 7.5

   (b) Air dryer 7.5

9. What do you understand by greenhouse effect? What are its consequences? How is it caused? 15

B.Tech. (Electrical Engineering) 8th Semester

(G-Scheme) Examination, July–2022

ADVANCES IN POWER TRANSMISSION AND DISTRIBUTION

Paper– PEC-EE-410-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt five questions in all, selecting, one question from each unit.* ***Question number 1 is compulsory.*** *All Questions carry equal marks.*

1. (a) What are the two methods of grading of cables. 3×5

(b) What is meant by stringing chart.

(c) Define string efficiency.

(d) What are the factor affecting the Sag in transmission line.

(e) Write down the types of grounding.

Unit–I

2. Explain the different types of FACTS controllers. 15

3. Describe the phenomena of transient stability enhancement using FACTS components. 15

Unit–II

4. Describe the different substation layouts and list few advantages of distribution system. 15

5. Explain the electric power system structure and layout. 15

Unit–III

6. What is the concept of optimum feeder switching for loss minimization and load control. 15

7. Explain your understanding about transmission of power and distribution of power. 15

Unit–IV

8. Explain the concept of modern distribution systems in detail. 15

9. Explain SCADA generation in detail. 15

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B.Tech. (Electrical Engineering) 8th Semester

(G-Scheme) Examination, July–2022

ENERGY MANAGEMENT AND AUDITING

Paper– OEC-EE-414-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt five questions in all, selecting one question from each unit. Question number 1 is compulsory. All Questions carry equal marks.*

1. (a) What is meant by waste heat recovery? 3×5=15

   (b) Define the term cogeneration.

   (c) What are the direct and indirect benefit: of waste heat recovery?

   (d) What are the two sources of feed water in a boiler system?

   (e) What is meant by steam traps?

Unit-I

2. Define Energy Management. What are the objectives of energy management? 15

3. Explain any five energy management opportunities in lightning systems. 15

Unit-II

4. What are the different types of energy audit? Explain the steps involved in detailed energy audit. 15

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5. (a) List down the major energy audits instruments and its use. 7.5

(b) Differentiate between simple payback period and net present value method. 7.5

Unit-III

6. (a) What is meant by loading of motor? Why does the efficiency of motor reduce when it operates at lower loading? List down any 2 steps to improve the operating efficiency of under-loaded motors. 7.5

(b) What are the energy management opportunities in electrolytic processes? 7.5

7. (a) Explain how setting a lower evaporator temperature helps in reducing the power consumption of an air conditioning system? List down any three-energy saving measures in domestic air conditioning system. 7.5

(b) Explain motor efficiency management and process of motor performance management. 7.5

Unit–IV

8. Describe energy management in solar energy and wind energy. 15

9. What are different types of renewable energy sources. How energy can be managed based on government policies. 15

B.Tech. (Electrical Engineering) 8th Semester (G-Scheme) Examination, July–2022

APPLICATION OF POWER ELECTRONICS IN POWER SYSTEMS

Paper– PEC-EE-404-G

Time allowed : 3 hours] *[Maximum marks : 75*

Note : *Attempt **five** questions in all, selecting **one** question from each unit. **Question Number 1 is compulsory.** All questions carry equal marks.*

1. (a) What is FACTS? How it is different from HVDC transmission? 2.5×6

(b) Mention the benefits of FACTS controller.

(c) Define Voltage swells and sags.

(d) What is HVDC converter? Why it is used?

(e) What is the drawback of passive filter?

(f) Write the application of UPFC.

Unit–I

2. Describe the function of static synchronous series compensator (SSSC) in detail 15

3. (a) Explain the steady state and dynamic problem in AC system. 7.5

(b) What are benefits due to FACTS controller? 7.5

Unit–II

4. Explain control strategies to improve system stability in FACTS. 15

5. Explain in detail Power Quality problem in distribution system. 15

Unit–III

6. Explain how harmonics are generated. Describe the mathematical model for analysis of harmonic stability. 15

7. Explain control strategies for passive filtering in FACTS. 15

Unit–IV

8. Write short notes on

   (a) Voltage Flicker 7.5

   (b) Mitigation of power quality problem using power electronics conditioner. 7.5

9. Explain different types of HVDC converter with their characteristics 15