B. Tech. (Electrical Engineering) 8th Semester, (G-Scheme) Examination, May–2024

SPECIAL ELECTRICAL MACHINES

Paper–PEC-EE-402-G

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

Note : ***Question No. 1 is compulsory.*** *Attempt* ***five*** *questions in total selecting* ***one*** *question from each unit.*

1. (a) Briefly discuss the principle of shaded pole motor.

   (b) What is the importance of Slip in 3-phase induction motor?

   (c) What is step angle?

   (d) Define torque constant of a stepper motor.

   (e) Define torque constant of a stepper motor. $5 \times 3 = 15$

Unit-I

2. Explain the construction and performance behaviour of double cage deep bar three-phase induction motor. 15

3. Derive an expression for development of rotating magnetic field in 3-phase induction motor. 15

Unit-II

4. Describe various methods of starting of a single-phase induction motor. 15

5. Draw and explain the construction and working of single-phase ac commentator motor. 15

Unit-III

6. Explain the construction of multi stack Variable Reluctance Stepper motor with the help of neat sketches. 15

7. Draw and explain Static and Dynamic characteristics of a stepper motor. 150

Unit-IV

8. Explain the construction and principle of operation of a Permanent Magnet DC motor. Compare it with an ordinary dc motor. 15

9. Write a short note on : 15

   (a) BLDC motor

   (b) Single phase synchronous motor

B.Tech., 8th Semester (G-Scheme) Electrical Engg.
Examination, May-2024
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 No. 1 is compulsory.*** *All questions carry equal marks.*

1. (a) Discuss latent heat storage.

   (b) Thermochemical storage.

   (c) Greenhouse effect.

   (d) What is drying mechanics?

   (e) What is heat transfer concept?

   (f) Write collector efficiency factor. 2.5×6=15

Unit-I

2. Explain solar radiation on tilted surfaces. 15

3. Explain solar radiation outside the earth surface and at the earth surface. 15

Unit-II

4. With the help of schematic diagram explain working of flat plate collectors with plane reflectors. 15

5. Explain the alternatives to the conventional collector and concentrating collectors. 15

Unit-III

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

7. Describe Thermochemical storage technique in thermal energy storage system. 15

Unit-IV

8. Explain performance analysis of a conventional air heater 15

9. Explain Greenhouse effect in detail. How is it caused? 15

B.Tech. (Electrical Engineering), 8th Semester (G-Scheme) Examination, May-2024

SOLAR ENERGY APPLIANCES

Paper -OEC-EE-408-G/OEC-EE-418-G

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

Note : *Attempt **five** questions in all, selecting one question from each unit. **Question No. 1 is compulsory.** All questions carry equal marks.*

1. (a) The working of a Solar Cell.
   (b) Types of Solar Cookers.
   (c) Drying Phenomenon Method.
   (d) Desalination Process.
   (e) Types of desalination.
   (f) Views of Solar still for sea water. Justify your answer. 6×2.5=15

Unit-I

2. What is Solar home lighting systems? Explain in detail with suitable diagram. 15

3. How Solar lighting system works? Explain with one case study with neat diagram. 15

Unit-II

4. (a) Explain box type solar cookers in detail. 7.5

   (b) Discuss in detail Process of testing of solar cookers. 7.5

5. Discuss the performance evaluation of solar cookers in detail. 15

Unit-III

6. What is a solar dryer? Classify them with schematic diagrams and explanations. 15

7. What is a mixed made type solar dryer? How does it differ from hybrid dryers? 15

Unit-IV

8. Discuss case studies on various desalination techniques. 15

9. (a) Write a note on simple solar still. 7.5

   (b) Discuss material Problems in solar still in detail. 7.5