BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE: ODALAREVU
(AUTONOMOUS)

**IV-B. TechII-Semester Regular / Supplementary Examinations (BR18), April - 2026**

**UTILIZATION OF ELECTRICAL ENERGY (EEE)**

**Time: 3 hours** **Max. Marks: 60**

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*Question Paper consists of Part-A and Part-B*
*Answer **ALL** the question in **Part-A***
*Answer any **FOUR** Questions from **Part-B***

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PART–A (6X2 = 12M)

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|---|---|---|---|
| 1. a) | List the advantages of electric drive over the other drives? | (2M) |
| b) | What are the different methods of Electric Welding? | (2M) |
| c) | Define the Luminous flux and MHCP? | (2M) |
| d) | State the stroboscopic effect? | (2M) |
| e) | What are the various factors affecting schedule speed? | (2M) |
| f) | Write short notes on Mechanics of Train movement? | (2M) |

PART–B (4X12 = 48M)

| | | |
|---|---|---|
| 2.a) | Explain the term "Load Equalization" and give its significance and its role in electric drives? | (6M) |
| b) | A 440V series motor takes a line current of 60 A and runs at a speed of 750rpm. What resistance should be connected in series with the armature to reduce the speed to 500rpm? The load torque at this new speed is 75% of its previous value. The resistance of the armature and series field is 0.05 ohm and 0.015 ohm respectively. Assume the flux is proportional to load? | (6M) |
| 3.a) | What are the polar curves and what is their significance. | (12M) |
| 4.a) | Explain the main objectives of Street Lighting and how Diffusion and Specular reflection principles are used in the design of street lighting calculations? | (6M) |
| b) | A room with an area of 6*9 m is illustrated by ten 80 W lamps. The luminous efficiency of the lamp is 80 lumens/W and the coefficient of utilization is 0.65. Find the average illumination. | (6M) |
| 5.a) | Explain the working of sodium lamp with a neat diagram? | (6M) |
| b) | Explain the working of Incandescent lamp with a neat diagram? | (6M) |
| 6.a) | Explain the advantages of electric traction over other non-electrical systems of traction including steam traction? | (6M) |
| b) | Distinguish between Crest Speed, Average speed and Schedule Speed in detail? | (6M) |
| 7.a) | Explain the factors affecting specific energy consumption of train with necessary expressions? | (12M) |

(5)

Course Code: 18EE8T19

**BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU**
**(AUTONOMOUS)**
**IV-B. Tech II-Semester Regular / Supplementary Examinations (BR18), April - 2026**
**ELECTRICAL DISTRIBUTION SYSTEMS (E.E.E)**

**Time: 3 hours** **Max. Marks: 60**

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*Question Paper consists of Part-A and Part-B*
*Answer **ALL** the question in **Part-A***
*Answer any **FOUR** Questions from **Part-B***

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PART–A (6X2 = 12M)

1. a) Discuss about the load factor. (2M)
   b) Illustrate the factors affecting the feeder voltage level. (2M)
   c) Write the expression for the total series voltage drop in uniformly distributed load. (2M)
   d) What are the common faults in a single phase 2-wire system? (2M)
   e) List out the merits by the use of power factor improvement. (2M)
   f) What is the basic function of booster transformer? (2M)

PART–B (4X12 = 48M)

2.a) Explain the different methods for reduction of Distribution system losses. (6M)
   b) Explain how is load modelling done in distribution systems (6M)
3.a) What is a distribution system? How is it subdivided to cater the needs of the customers? (6M)
   b) Discuss how an ideal substation with feeders can be arranged? How is it analysed forpercentage voltage drop? (6M)
4.a) Derive the expression for voltage drop for non-uniformly radial type distribution load. (12M)

5.a) Discuss in detail about the coordination among protective devices used in distribution system (6M)
   b) Illuminate the principle of a sectionalizer. How is it coordinated with a fuse? (6M)
6.a) Explain how reduction in line current and power losses are obtained withpower factor improvement (6M)
   b) Discuss in detail the procedure for best location of capacitor placement in a distribution system. (6M)
7.a) What are the different methods for voltage control discuss any one with neat diagram (6M)
   b) Describe how series capacitors and boost transformers control the voltage in the distribution systems. (6M)

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25/04/2026 (BR18)

Course Code: 18EE8T20

**BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU**
**(AUTONOMOUS)**
**IV- B. Tech II-Semester Regular/Supplementary Examinations (BR18), APRIL - 2026**
**RENEWABLE ENERGY SOURCES**
**(Electrical and Electronics Engineering)**

**Time: 3 hours** **Max. Marks: 60**

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*Question Paper consists of Part-A and Part-B*
*Answer **ALL** the question in **Part-A***
*Answer any **FOUR** Questions from **Part-B***

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## PART–A (6X2 = 12M)

| | | | |
|---|---|---|---|
| 1. | a) | Define solar constant | (2M) |
| | b) | Explain the principle of conversion of solar energy into heat. | (2M) |
| | c) | List the various materials used in making a Solar Cell. | (2M) |
| | d) | Define the tip speed ratio of wind turbines. Why it is important? | (2M) |
| | e) | List the advantages and limitations of Tidal power generation. | (2M) |
| | f) | Classify Geothermal Sources. | (2M) |

## PART–B (4X12 = 48M)

| | | | |
|---|---|---|---|
| 2. | a) | Explain in detail about the solar radiation at the earth surface. | (12M) |
| 3. | a) | Draw the schematic diagram for Solar pond based electric plant and explain in detail the principle of working. | (6M) |
| | b) | Explain in detail the different factors that affect the performance of a Flat plate collector. | (6M) |
| 4. | a) | Explain the significance of Perturb and Observe MPPT method and how it can be realized. | (6M) |
| | b) | Explain the current – voltage characteristics of a Solar cell and define Fill factor and give its significance. | (6M) |
| 5. | a) | Explain Betz model of expanding air stream tube to determine extraction of wind energy by windmill. | (6M) |
| | b) | Derive an expression for maximum power output of wind turbine with usual notations. | (6M) |
| 6. | a) | Explain the different types of turbines that are used in Small scale hydroelectric power generation. | (6M) |
| | b) | Derive the expressions for Potential and Kinetic Energy of the wave energy | (6M) |
| 7. | a) | Give in a detailed comparison between Geothermal Power plant and Conventional thermal Power plant. | (12M) |

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Course Code: **18EE8D08**

**BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE::ODALAREVU**
**(AUTONOMOUS)**
**IV-B.Tech II-Semester Regular/Supply Examinations (BR18), April - 2026**
**FLEXIBLE ALTERNATING CURRENT TRANSMISSION SYSTEMS (EEE)**

Time: 3 hours Max. Marks: 60

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*Question Paper consists of Part-A and Part-B*
*Answer **ALL** the question in **Part-A***
*Answer any **FOUR** Questions from **Part-B***

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## PART–A (6X2 = 12M)

| | | | |
|---|---|---|---|
| 1. | a) | Explain concept of power flow in ac system and explain difference when one of the parallel paths is replaced with HVDC transmission. | (2M) |
| | b) | Distinguish between self-commutating converters with line-commutating converters | (2M) |
| | c) | Explain necessity of VAR compensation in transmission system. | (2M) |
| | d) | Explain different losses that are encountered with FC – TCR arrangement | (2M) |
| | e) | Explain important features of GTO thyristor-controlled series capacitor. | (2M) |
| | f) | Explain the importance of Interline power flow controller (IPFC) | (2M) |

## PART–B (4X12 = 48M)

| | | | |
|---|---|---|---|
| 2. | a) | What do you mean by loading capability on transmission line and explain different kinds of limitations | (6M) |
| | b) | What are FACTS controllers and explain different categories of FACTS controllers. | (6M) |
| 3. | a) | Explain the operation of three phase full wave bridge type voltage source converter with a neat circuit along with the necessary waveforms | 12M |
| 4. | a) | Explain the mid–point voltage regulation for line segmentation with necessary diagrams and expressions | (6M) |
| | b) | Describe the improvement of transient stability using shunt compensation with necessary diagrams | (6M) |
| 5. | a) | Explain Statcom with a neat block diagram. | (6M) |
| | b) | Explain basic Fixed Capacitor–Thyristor Controlled reactor type Static Var Generator with a neat circuit and its output characteristics | (6M) |
| 6. | a) | Discuss the concept of series capacitive compensation with necessary expressions. | (6M) |
| | b) | Explain with a neat circuit diagram of thyristor switched series Capacitor (TSSC) | (6M) |
| 7. | a) | Explain the basic operating principles of IPFC with a conceptual representation and wave forms. | 12M |

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