Hall Ticket Number :										

R-17

Code: 7GC51

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2023

Environmental Studies

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

****

UNIT–I

1. Explain the scope and importance of environmental studies. 14M

OR

2. Discuss briefly the famous personality's contribution towards conservation of environment. 14M

UNIT–II

3. a) Explain the various effects of land degradation. 7M
   b) Summarize the causes of deforestation. 7M

OR

4. a) Explain the reasons for soil erosion. 7M
   b) Discuss various types of droughts. 7M

UNIT–III

5. Identify and explain the major threats to the biodiversity. 14M

OR

6. a) Explain with the help of a diagram the nitrogen cycle. 7M
   b) Categorize the types of ecological pyramids. 7M

UNIT–IV

7. List out all environmental pollutions and their sources in detail. 14M

OR

8. a) Discuss various control measures to minimize water pollution. 7M
   b) Explain the effects of marine pollution. 7M

UNIT–V

9. a) List out seven major environmental issues. 7M
   b) Discuss the necessity of conservation of water. 7M

OR

10. a) Explain the effects of depletion of ozone layer. 7M
    b) Describe briefly the environment and its relation to human health. 7M

***

Hall Ticket Number :										

R-17

Code: 7G254

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2023

Power Electronics

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

****

UNIT–I

1. Compare the Resistance (R) and Resistance-Capacitance (RC) triggering circuits of SCR 14M

OR

2. a) Explain about the Dynamic turn on Characteristics of SCR with wave forms 7M

   b) Describe the UJT triggering circuit with neat sketch. 7M

UNIT–II

3. Justify why protection circuits are required in SCR? Explain in detail about the di/dt and dv/dt protection with neat sketch. 14M

OR

4. a) Explain in detail gate protection of SCR with neat sketch 7M

   b) Analyze the cooling mechanism and mounting of thyristors. 7M

UNIT–III

5. Analyze the effect of source inductance in the operation of single phase fully controlled converter with relevant diagram. 14M

OR

6. a) Explain the operation of single phase full wave controlled rectifier with 'R' load with neat circuit diagram and necessary waveforms 7M

   b) Summarize the role of freewheeling diode in converters. 7M

UNIT–IV

7. A chopper circuit is operating on TRC principle at frequency of 4 KHZ and 220V DC supply. If the load voltage is 175V .Compute the Conduction and blocking periods of thyristor in each cycle. 14M

OR

8. a) Explain the operation of step up chopper and derive an expression for its output voltage 7M

   b) Describe the various types of chopper configurations briefly. 7M

UNIT–V

9. Design a suitable gate scheme for proper functioning of three phase voltage source inverter in 180^{o} operating mode and obtain phase and line voltage waveforms 14M

OR

10. Differentiate CSI and VSI. 14M

***

Hall Ticket Number :										

R-17

Code: 7G253

III B.Tech. I Semester Supplementary Examinations Nov/Dec 2023

Electrical Power Transmission

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

****

UNIT–I

1. Develop the expression for the Inductance per unit length of an overhead line from the basics of magnetic fields. 14M

OR

2. a) Derive the capacitance of a 1-φ two wire line 8M

   b) The horizontally placed conductors of a 1- φ line operating at 50Hz are having outside diameter of 1.6cm and the spacing between centers of the conductors is 6m. The permittivity of free space is 8.854×10^{-12} F/m. Determine the capacitance to ground per km of each line. 6M

UNIT–II

3. a) Evaluate ABCD constants for Short Transmission line 5M

   b) Explain in detail about the short and medium lines 9M

OR

4. Discuss in detail the nominal-T representation with neat circuit diagram and phasor diagram. Derive also its performance specifications. 14M

UNIT–III

5. a) What is surge impedance? Define Surge Impedance loading? What is the relation of SIL with Ferranti effect? 8M

   b) What is the difference between lumped parameters and distributed parameters? 6M

OR

6. Discuss in detail the different mathematical methods for obtaining ABCD constants of long line. 14M

UNIT–IV

7. a) What are the factors affecting corona and explain in detail. 8M

   b) Define the following
   i) Reflection ii) Refraction iii) Attenuation 6M

OR

8. With neat sketches describe the travelling of the wave for open and short circuited ends at different time instants. 14M

UNIT–V

9. a) Develop the mathematical relations of insulation resistance and capacitance of single core cable. 6M

   b) Find the Voltage distribution of 5 disc insulator string and prove that voltage distribution is not uniform. 8M

OR

10. Define String Efficiency? Discuss the different methods of improving string efficiency? 14M

***