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B. Tech. (EE) Program (Elective-V) 7th Semester

(G-Scheme) Examination, December–2024

ADVANCED POWER TRANSMISSION

Paper-PEC-EE-415G

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

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

1. (a) List the features of EHV transmission system.
   (b) What are major challenges in EHVAC transmission?
   (c) Why FACTS are needed in EHV transmission?
   (d) What are major transmission problem in India?
   (e) Write brief about starting of dc link.
   (f) Draw the block diagram of HVDC transmission system. 6×2.5=15

Section-A

2. Explain in detail mechanical consideration for design of EHV lines. 15

3. Define bundle conductors. Mention the properties of bundle conductors. Also draw configuration of bundle conductor for N=1 to 8. 15

Section-B

4. What are different components of HVDC converter station unit? Explain them in detail with diagram. 15

5. (a) Explain the characteristics of dc link with diagram. 7.5

   (b) Mention the advantages and disadvantages of HVDC transmission. 7.5

Section-C

6. Write short notes on :

   (a) UPFC 7.5

   (b) STATCOM 7.5

7. Explain in detail mechanism of active and reactive power flow control in high voltage dc transmission system.

Section-D

8. What are various power quality issues? Explain in detail with waveforms. 15

9. Write short notes on :

   (a) Factors affecting power quality 7.5

   (b) Control of power quality issue 7.5

B. Tech. (EE) Programme Elective-IV, 7th Semester

G-Scheme Examination, December, 2024

UTILIZATION OF ELECTRICAL POWER

Paper : PEC-EE-405G

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

Note: *Attempt **five** questions in all. **Questions No. 1 is compulsory.** Attempt **four** more questions from the **sections A, B, C** and **D** by selecting at least **one** question from each section.*

1. Write short notes on the following : 6×2.5=15

(a) What is an electric drive and what are its key components?

(b) What factors influence the choice of motor for a particular application?

(c) Explain the principle of resistance welding.

(d) What is the importance of illumination in human activities?

(e) How has the Indian Railways evolved its electric traction system over time?

(f) What is the significance of the "tractive effort" in the context of electric traction?

Section-A

2. (a) What are the advantages of using an induction motor as an electric drive over a DC motor? 8

   (b) Explain the principle of operation of a Variable Frequency Drive (VFD) and its application in speed control. 7

3. (a) Explain the term 'inrush current' and its effect on electric drives during startup. 8

   (b) What factors affect the running efficiency of electric drives under load conditions? 7

Section-B

4. (a) How does electric heating provide precise temperature control? 8

   (b) How is the welding current determined in resistance welding? 7

5. (a) What is dielectric heating and how does it differ from other heating methods? 8

   (b) How do dielectric materials behave in the presence of an alternating electric field? 7

Section-C

6. State and explain the Inverse Square Law of illumination. How does the angle of incidence affect the illumination on a surface? 15

7. What are discharge lamps and how do they differ from incandescent lamps? Explain the working principle of a sodium vapor lamp. 15

Section-D

8. Discuss the specific requirements of a traction motor compared to other types of electrical motors. Why is the choice of motor critical for high-performance train operations? 15

9. Explain the principle of electric braking in electric traction systems. What is regenerative braking? How does it work and what are its benefits for both the train and the electrical grid? 15

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B.Tech. (EE) 7th Semester Open Elective III

(G-Schme), Examination, December - 2024

RENEWABLE ENERGY AND DISTRIBUTED GENERATION

Paper - OEC-EE-403-G

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

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

1. Write short note on :

   (a) Micro Turbine

   (b) Solar Energy

   (c) Power Electronic interface with the grid

   (d) Protection of Distributed Generators

   (e) Wave Energy

   (f) IC Engines 6×2.5=15

Unit - I

2. Discuss the future trends in energy generation. Will distributed system eventually replace central station generation or will they coexist? 15

3. Examine the potential for internal combustion engines in power generation and their role in backup and peaking plants. 15

Unit - II

4. Critically evaluate the challenges of integrating hydropower into modern electricity grids. 15

5. Evaluate the role of fuel cells in reducing air pollution and their advantages over conventional fossil fuel-based power generation. 15

Unit - III

6. Evaluate the different types of power quality distrubances and their causes. 15

7. Discuss the impact of distributed generation on the traditional utility model and its implications for grid management. 15

Unit - IV

8. Evaluate the challenges in protecting distributed generators in grid-connected system. 15

9. Assess the long-term economic sustainability of distributed generation in comparison to centralized power generation. 15

B. Tech. (EE) Open Elective- IV 7th Semester

G-Scheme Examination, December, 2024

ELETRONIC PRINCIPLES

Paper : OEC-ECE-451-G

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

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

1. (a) Explain VI characteristics of diode.
   (b) Discuss in detail voltage multiplier circuit.
   (c) Discuss application of LED.
   (d) Give out advantages of LCD over LED.
   (e) Convert Decimal 145.75 into binary.
   (f) Convert Hexa 4AB4 into octal. 6×2.5=15

Unit-I

2. (a) Explain formation of PN junction and draw its load line. 9
   (b) Discuss switching Characteristics of a PN Diode. 6

3. (a) Explain working of a half wave rectifier. 9

(b) Explain working of clipping circuit. 6

Unit-II

4. Write short notes on the following : 2×7.5=15

(a) Working of Zener Diode.

(b) Working principle of UJT

5. (a) Explain working of Voltage Regulator. 8

(b) Explain working TRIAC. 7

Unit-III

6. How LED is used as display device? Draw the diagram and explain working of LED. Also enumerate its applications. 15

7. Draw the electrical and circuit diagram and explain working of 7 segment display. 15

Unit-IV

8. (a) Solve the following : 2×5=10

(i) $A + BC + (CA - AB)(A - B - C)$

(ii) $(A + C + B) + (AA + 1)(B + C + 1)$

(b) Draw symbol and Truth table of AND, OR and NOT gate. 5

9. (a) Explain working of sequential circuit. 7

(b) Explain working of JK flip flop and write its truth table. 8

B. Tech. 7th Semester (Electrical & Electronics Engg.)

Open Elective-I G-Scheme

Examination, December, 2024

FUNDAMENTALS OF MANAGEMENT

Paper : HSMC-08-G

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

Note: Attempt any five questions in all by selecting one from each question. Question No. 1 is compulsory.

Section-A

1. Describe the following concepts : 6×2.5=15

   (a) Personnel Management

   (b) Inventory

   (c) Marketing

   (d) Financial Management

   (e) Training

   (f) Advertising

Section-B

Unit-I

2. Describe the significance and process of staffing. 15

3. "Management is the art of getting things done through other people", In the light of this statement. Explain the importance of management. 15

Unit-II

4. Explain the significance of Production Planning in Management. 15

5. Write the methods of Inventory control. 15

Unit-III

6. What are functions of Advertising? 15

7. What are the objectives of marketing management? 15

Unit-IV

8. Describe the concept of capital structure. What are the determinants of capital structure? 15

9. What are the functions of financial management? 15