

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. $6 \times 2.5 = 15$

Unit-I

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

3543-P-3-Q-9 (24)

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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 : $2 \times 7.5 = 15$
(a) Working of Zener Diode. 8
(b) Working principle of UJT 7
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 : $2 \times 5 = 10$
(i) $A + BC + (CA - AB)(A - B - C)$
(ii) $(A + C + B) + (AA + 1)(B + C + 1)$

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- (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

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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.

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3544-P-2-Q-9 (24)

[P.T.O.]

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

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

G-Scheme Examination, December, 2024

POWER MANAGEMENT

Paper : PEC-EE-401-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) Compare the advantages and disadvantages of developing renewable versus non-renewable power plants. $6 \times 2.5 = 15$
- (b) How do consulting services contribute to risk management and project quality assurance?
- (c) What are the key challenges faced in grid management during peak demand periods and how are they addressed?
- (d) Explain the difference between risk assessment and hazard identification in the power sector.

3556-P-4-Q-9 (24)

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- (e) List the importance of site visits in understanding the environmental impact of power generation activities.
- (f) How do resource availability and environmental impact influence the choice between fossil fuels and renewable energy resources?

Unit-I

- 2. (a) What are the major challenges involved in the resettlement and rehabilitation of communities displaced by power infrastructure projects? 7.5
- (b) What are the seismic risks associated with large-scale power plants and how these risks be mitigated through design and planning? 7.5
- 3. Explain the role of state and federal governments in the regulation and promotion of power infrastructure projects. Also discuss the importance of public-private partnerships in the development of sustainable energy infrastructure. 15

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Unit-II

- 4. (a) What tools and techniques are commonly used in time scheduling for power projects and how do they contribute to minimizing delays? 7.5
- (b) What are the advantages and disadvantages of fixed-price contracts versus cost-plus contracts in power project development? 7.5
- 5. (a) Compare different construction methods used in building power plants with a focus on renewable versus non-renewable projects. 7.5
- (b) Explain the role of a well-structured maintenance organization and planning in ensuring the availability and reliability of power infrastructure. 7.5

Unit-III

- 6. Discuss the key considerations in the management of fuel resources (e.g. coal, natural gas) for thermal power plants. How does efficient resource management affect the sustainability and cost of power generation? 15

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7. (a) Explain the importance of grid management in maintaining the stability of the electricity supply across different regions. 7.5
- (b) How can regular site visits to power plants contribute to improving maintenance practices and operational reliability? 7.5

Unit-IV

8. (a) Explain the steps involved in conducting a risk assessment in a power station. 7.5
- (b) Discuss the roles and responsibilities of state and central power boards in managing power generation, transmission and distribution. 7.5
9. Discuss the impact of regulatory reforms (such as the Electricity Act of 2003) on the structure and functioning of the electricity industry. 15

3558

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 : $6 \times 2.5 = 15$
- What is an electric drive and what are its key components?
 - What factors influence the choice of motor for a particular application?
 - Explain the principle of resistance welding.
 - What is the importance of illumination in human activities?
 - How has the Indian Railways evolved its electric traction system over time?
 - What is the significance of the "tractive effort" in the context of electric traction?

3558-P-3-Q-9 (24)

[P.T.O.]

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

3563

**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. $6 \times 2.5 = 15$

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

3563-P-2-Q-9(24)

[P.T.O.]

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

3566

**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

3566-P-3-Q-9(24)

[P.T.O.]

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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 disturbances and their causes. 15

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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

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**B. Tech. (EE) Open Elective-IV 7th Semester, G-Scheme
Examination, November-2023
ELECTRONIC PRINCIPLES
Paper-OEC-ECE-451-G**

Time allowed : 3 hours]

[Maximum marks : 75

Note: Attempt five questions in all selecting at least one question from each section. Question No.1 is compulsory.

1. Explain the following: 6×2.5
- (a) Diode as a circuit element
 - (b) Voltage multiplier
 - (c) LCD
 - (d) NOR Gate
 - (e) MOSFET
 - (f) Sequential v/s combinational circuits

Section-A

2. (a) Explain the operation of Diode as a Clamper. 8
(b) Explain full wave rectifier in detail. 7

Or

3. Describe the P-N junction diode with its I-V characteristics. Also write some applications of Diode. 15

3543-P-2-Q-9 (23)

[P. T. O.]

Section-B

4. (a) Write down some difference between BJT and UJT. 7
 (b) Draw the I-V characteristics of BJT for Common Emitter configuration. 8

Or

5. (a) Explain DIAC in detail. 8
 (b) Define how Zener Diode works as a voltage regulator. 7

Section-C

6. (a) Explain the working of LED. 7
 (b) Which one is better between LCD & LED? Why? 8

Or

7. Write short notes on:
 (a) Seven Segment Display 7.5
 (b) Sixteen Segment Display 7.5

Section-D

8. (a) Explain basic logic gates in detail. 7
 (b) Discuss the basics of flip-flop. 8

Or

9. (a) What are combinational circuits? How they are different from Sequential circuits? 8
 (b) Explain Number Systems in detail. 7

3544

**B. Tech. 7th Semester (CSE) Open Elective-1
(G-Scheme) Examination, November-2023
FUNDAMENTALS OF MANAGEMENT**

Paper-HSMC-08-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. Write short notes in 40 -50 words: $6 \times 2.5 = 15$
- (i) Definition of Management
 - (ii) Production Management
 - (iii) Types of Training
 - (iv) Define Marketing Research
 - (v) Various sources of finance
 - (vi) Objectives of Marketing Management

Unit-I

2. What do you mean by Personnel management?
Also explain various function of personnel management. 15
3. Define management. Explain various principles of management. 15

3544-P-2-Q-9 (23)

[P. T.O.]

Unit-II

4. What is meant by production management? Explain various objectives and functions of production management. 15
5. Define Inventory control. Also explain various methods of inventory control. 15

Unit-III

6. Explain the term Marketing. Explain various objectives and functions of marketing management. 15
7. What do you mean by Advertising? Explain its objectives and functions. 15

Unit-IV

8. Define Financial Management. Explain the objectives and functions of financial management. 15
9. What is capital structure? Explain various short term and long term sources of finance. 15

3556

**B. Tech. (EE) Program Elective-IV 7th Semester
(G-Scheme) Examination, March-2023**

POWER MANAGEMENT

Paper-PEC-EE- 401-G

Time allowed : 3 hours]

[Maximum marks : 75

Note: Question No. 1 is Compulsory. Attempt five questions in all questions, selecting one question from each section.

1. (a) What is hazard? Write & suggest ways to prevent hazards.
- (b) Suggest methods for power safety, state its importance.
- (c) Why is fuel management an important issue? Explain.
- (d) Define Procurement.
- (e) Enlist various power resources.
- (f) What is a good power planning? State in brief.

6×2.5

Section-A

2. What is Power Planning? Suggest a good plan. Highlight & explain the importance of feasibility studies in power planning. 15
3. Write notes on:-
 - (i) Seismic considerations in power management.
 - (ii) Environmental Issues in power management.

7.5+7.5

3556-P-2-Q-9 (23)

[P. T. O.]

Section-B

4. Write in detail about the layout of equipments. State its importance (layout). Draw a typical diagram to represent a power plant / system. 15
5. Write notes on:- 15
- (i) Project cost control
 - (ii) Time scheduling

Section-C

6. Explain & Compare the power sector structure in various states of India. 15
7. Write notes on the following:-
- Water storage and handling in power management, handling of power shortage. 15

Section-D

8. What do you mean by power risk assessment? Explain various methods used for this. 15
9. Explain:- 15
- (i) Safety Regulation Bill
 - (ii) Risk & hazards in power sector

3562

**B. Tech. (EE) Program Elective-V 7th Semester
(G-Scheme) Examination, November-2023
MICROCONTROLLER BASED SYSTEM DESIGN
Paper-PEC-EE-413-G**

Time allowed : 3 hours] [Maximum marks : 75

Note: Q. No. 1 is compulsory & attempt any one question from each section. All questions carry equal marks.

1. (a) Explain about watchdog timer.
- (b) Give the bit position of PSW.
- (c) What is RISC ?
- (d) What is microcontroller ?
- (e) What is "W" register in PIC microcontroller ?
- (f) What are features of Timer 2?
- (g) What is state machine model?
- (h) Define the term glitch in ADC.
- (i) Mention the delay types occurred in interfacing LCD with PIC.
- (j) What are the advantages of RISC Processor?

Section-A

2. (a) Explain various types of addressing modes of PIC microcontroller.

3562-P-3-Q-9 (23)

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(b) Explain memory organization of a PIC microcontroller.

3. Draw and explain block diagram of PIC16C6X and PIC16C7X microcontroller.

Section-B

4. (a) Draw the block diagram of PIC timer 0.
(b) Explain the concept of interrupts in detail.
5. (a) How timer 2 is different from timer 0 and 1? Explain.
(b) Write a Program to display a constant in PIC.

Section-C

6. (a) Explain in detail the interfacing of temp sensor using I2C bus.
(b) Explain with neat diagram interfacing of serial EEPROM using I2C bus.
7. (a) Explain with neat diagram the use of UART to interface two PIC resources.
(b) What do you mean by sensor interfacing? Explain.

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Section-D

8. (a) With neat sketch, explain the functional block diagram of ARM architecture.
(b) Discuss about ARM instruction set.
9. (a) Explain with examples in detail the Data processing instructions of ARM processor.
(b) Explain with examples in detail the Data transfer instructions of ARM Processor.

3562

**B. Tech. (EE) Open Elective-III 7th Semester,
(G-Scheme) Examination, November-2023
RENEWABLE ENERGY AND DISTRIBUTED
GENERATION**

Paper-OEC-EE-403-G

Time allowed : 3 hours]

[Maximum marks : 75

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

1. (a) What do you mean by distributed generation?
(b) Discuss four points on Impact of distribution generation on power system.
(c) What is a solar PV module?
(d) How will the grid integration impact consumers? Explain with suitable examples.
(e) What are the criteria for site selection in wind mill?
(f) What are the classifications of fuel cell energy? 6×2.5=15

Section-A

2. (a) Distinguish between central and distributed generation with their advantages and disadvantages. 15

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or

3. Explain internal combustion engine in detail. 15

Section-B

4. Explain the operation of hybrid solar PV and wind power system. 15

or

5. Classify the solar cells. Derive an expression for the power developed due to wind. 15

Section-C

6. What are the various issues of power quality? Explain in detail various power quality disturbances. 15

or

7. Explain in brief advantages and disadvantages in integrating power electronics with the grid. 15

Section-D

8. Explain in brief economics of distributed generation. 15

or

9. What are the significances of islanding in interconnected grid? 15

3566