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B. Tech. 6th Semester (EE) Examination – May, 2025

POWER SYSTEMS - II

Paper : PCC-EE-302-G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. (a) What do you mean by control area in power system ? Explain it.

(b) Why do we go for iterative methods to solve load problems ?

(c) Define the term ITL.

(d) Define steady state stability.

(e) In which condition generator bus is treated as load bus ?

(f) What is the objective of the economic dispatch problem ? $6 \times 2.5 = 15$

SECTION – A

2. Detail the algorithm to perform load flow using GS method and also draw its flow chart. 15

3. Formation of y bus by direct inspection method for the data as given below : 15

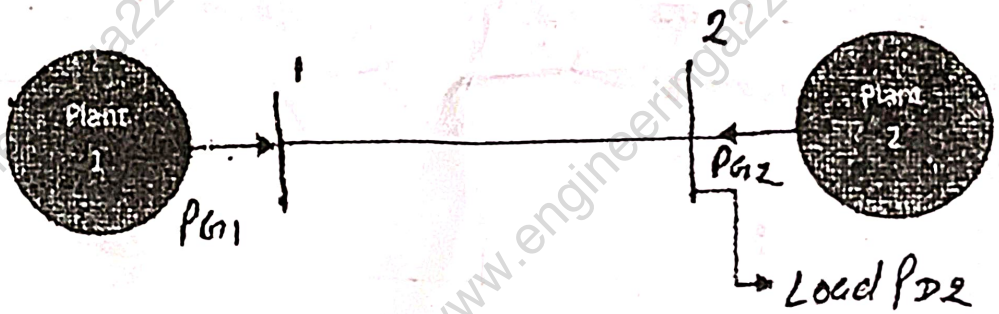
Sr. No.	Sending node	Receiving node	R(PU)	X(PU)
1	1	2	0.10	0.40
2	1	4	0.15	0.60
3	2	3	0.05	0.20
4	3	4	0.10	0.40
5	4	5	0.10	0.40
6	5	3	0.15	0.60
7	2	4	0.15	0.60

SECTION – B

4. In a two bus system if 100MW is transmitted from plant 1 to the load, a transmission loss of 10 MW is incurred. Find the required generation for each plant and the power received by the load when the system λ is Rs. 25/MWh. The Incremental fuel costs of the two plants are given below : 15

$dC_1/dP_{G1} = 0.020\ P_{G1} + 16$ Rs./MWh

$dC_2/dP_{G2} = 0.04\ P_{G2} + 20$ Rs./MWh



5. Derive the expression for economic load dispatch considering transmission line losses. 15

SECTION – C

6. What are the different methods for voltage control ? Explain them in brief. 15

7. Explain with block diagram of single area load frequency control. 15

SECTION – D

8. Derive swing equation and discuss its application in study of power system stability. 15

9. (a) Derive an expression for the maximum power transfer between two nodes, Show that this power is maximum when $X = \sqrt{3}R$. Where X is reactance and R is the resistance of the system. 10

(b) What is equal area criterion ? Explain in brief. 5

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B. Tech. 6th Semester (EE) Examination – May, 2025

ELECTRONICS DESIGN LABORATORY

Paper : LC-EE-310G

Time : Three Hours] *[Maximum Marks : 50*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. (a) What are the basics of PCB design ? $2.5 \times 4 = 10$

(b) Why is 8051 called 8-bit microcontroller?

(c) Discuss the function oftransducer.

(d) Enlist various parts of CRO.

UNIT – I

2. Describe various elements of generalised measurement system. 10

3. What do you mean by the term noise ? Give the classification of noise for an electronic system. 10

UNIT – II

4. What is signal conditioning ? Explain different types of signal conditioning. 10

5. Draw and explain the block diagram of data acquisition system. Also discuss its objectives. 10

UNIT – III

6. Explain the interfacing of LCD with 8051 microcontroller. 10

7. Explain the working of CPLD and FPGA. 10

UNIT – IV

8. Describe various characteristics of ideal operational amplifier. 10

9. Write a short note on electronic system design employing microcontroller. 10

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B. Tech. 6th Semester (EE) Examination – May, 2025

POWER ELECTRONICS

Paper : PCC-EE-205-G

Time : Three Hours] [*Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. (a) Draw the equivalent circuit of IGBT and explain. $10 \times 1.5 = 15$

(b) Draw the switching characteristics of Power Transistor.

(c) What are the necessary conditions for turning ON a SCR ?

(d) Mention the advantages of RC triggering over R triggering.

(e) Draw the circuit diagram of three phase M-3 controlled converter.

(f) Obtain the output waveforms & average output voltage for I-phase Half wave controlled rectifier with RL load.

(g) Write the applications of inverter.

(h) What are the applications of DC chopper ?

(i) What is ON-OFF control in ac voltage controllers ?

(j) What is meant by Duty cycle ?

SECTION – A

2. (a) Write about the role of power electronics. What are the requirements of good gate driver circuits of IGBT and MOSFET ? 7.5

(b) Explain the various triggering modes, construction and working of a TRIAC. 7.5

3. Write technical notes on: DIAC, Power Diode & SIT. 15

SECTION – B

4. Explain construction, characteristics, ratings and protection in SCR. 15

5. (a) Explain the series and parallel connections in SCRs. 7.5

(b) Write technical notes on: pulse transformer and opto-coupler. 7.5

SECTION – C

6. (a) Describe a 3-phase half wave diode bridge rectifier with a circuit diagram and relevant waveforms for R load. 7.5

   (b) Explain the operation of single phase two pulse midpoint converter with relevant voltage and current waveforms and also derive the expression for average output voltage. 7.5

7. Write down about four quadrant / dual converter. 15

SECTION – D

8. Explain 120 degree mode and 180 degree mode inverters. 15

9. (a) Differentiate between voltage and current commutated choppers. 7.5

   (b) Write about four quadrant chopper. 7.5

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B. Tech. 6th Semester (EE) (Elective - III) Examination – May, 2025

POWER SYSTEM PROTECTION

Paper : PEC-EE-06-G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. (i) Explain the component of protection system ? 15

   (ii) Specify the types of faults ?

   (iii) How we can do the testing of relay.

   (iv) How the power swings effect the system ?

SECTION – A

2. Explain the classification of circuit breaker in details. 15

3. Write notes on : 15

(a) Instrument transformers

(b) Protection against the failure of excitation.

SECTION – B

4. Explain the over current and earth fault protection of transformer. 15

5. Drive the expression for the double line to ground fault. 15

SECTION – C

6. Explain the bus bar protection in detail ? 15

7. Explain the simulation of transient using electro-magnetic transient programme. 15

SECTION – D

8. Write notes on : 15

(a) Out-of-step protection

(b) Synchro-phasor

9. Explain the under voltage system protection scheme. 15

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B. Tech. 4th Semester (Bio-Tech) Examination – May, 2025

ORGANIZATIONAL BEHAVIOUR

Paper : HSMC-02-G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. Answer the following questions in short : $2.5 \times 6 = 15$

   (a) Explain the function of Management.

   (b) What are the different sources of conflict ?

   (c) What are the different Channels of communication ?

   (d) Explain Organizational Structure.

   (e) Explain the Concept of Motivation.

   (f) Differentiate between Management and Organization.

UNIT – I

2. What do you understand by management ? Explain the various functions of management. How the various functions of management are helpful in achievement of organizational objectives ? 15

3. Explain the difference between management and administration. Also discuss the scope and importance of Management. 15

UNIT – II

4. Define perception and explain the process of perception from the point of view of Organizational Behaviour. 15

5. 'Motivation is the core of management'. Comment. What suggestion would you offer to the management to motivate its staff in an industrial organization ? 15

UNIT – III

6. Explain the concept of team ? How is a team different from a group ? Explain the stages in group development and their implications. 15

7. Identify the leadership styles describing the situation under which each style is useful. What factors influence the choice of leadership style ? 15

UNIT – IV

8. What do you understand by Organizational structure? Explain the different types of Organizational structure and also discuss their effect on human behaviour. 15

9. What is Organizational Change ? Explain the types and factors affecting Organizational Change. 15

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B. Tech. 6th Semester (EE) (Elective - V) Examination – May, 2025

CONVENTIONAL AND RENEWABLE ENERGY RESOURCES

Paper : OEC-EE-08G

Time : Three Hours] *[Maximum Marks : 75*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

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

1. (a) What are the recent trends in power generation ? $10 \times 1.5 = 15$

(b) Explain the significance of load factor in power generation.

(c) Describe the working principle of a thermal power station.

(d) Discuss the selection criteria for wind energy plant sites.

(e) Define energy audit and its importance.

(f) What is co-generation and how does it contribute to energy conservation ?

(g) Differentiate between base load and peak load power plants.

(h) Describe the working principle of a nuclear power plant.

(i) How are reserves and depreciation accounted for in power generation planning ?

(j) Explain the concept of group diversity factor in load forecasting.

SECTION – A

2. Discuss the availability of different energy sources worldwide and their contribution to power generation. 15

3. Explain the concept of interconnected generation of power plants and its advantages. 15

SECTION – B

4. Explain the concept of load forecasting. How is it useful in power generation planning ? 15

5. Discuss the significance of capacity factor and how it influences the selection of unit size in power plants. 15

SECTION – C

6. Compare and contrast thermal, hydroelectric, and nuclear power plants in terms of their working principles and environmental impacts. 15

7. Describe the selection criteria and working principles of hydroelectric power plants. 15

SECTION – D

8. Discuss the importance of energy management in electric energy conservation. 15

9. Explain the concept of energy-efficient motors and their role in energy conservation. 15
