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**B. Tech. (EE) 6th Semester (G Scheme)**

**Examination, July-2022**

**POWER SYSTEMS-II**

**Paper-PCC-EE-302G**

*Time allowed : 3 hours]*

*[Maximum marks : 75*

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

1. (a) Explain Area Control Error (ACE) in detail.  
(b) Define steady state stability.  
(c) What is the significance of incremental cost ( $\lambda$ ) ?  
(d) What are the different types of buses ?  
(e) What are the information that are obtained from a load flow study ?  
(f) What is the objective of the economic dispatch problem ?
- 6×2.5=15

**Section-A**

2. What is the importance of load flow analysis in power system ? Derive basic load flow equation for n bus system.

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[P. T. O.]

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3. The load flow data for the sample power system are given below. The voltage magnitude at bus 2 is to be maintained at 1.04 p.u. the max and min reactive power limits of the generator at bus 2 are 0.35 and 0.0 p.u. respectively. Determine the set of load flow equation at the end of first iteration by using N-R method :

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Bus code	Impedance	Line charging admittance
1 - 2	$0.08 + j0.24$	0
1 - 3	$0.02 + j0.06$	0
2 - 3	$0.06 + j0.18$	0

Schedule of generation of loads :

Bus code	Assumed voltage	Generation		Load	
		MW	MVAR	MW	MVAR
1	$1.06 + j0.0$	0	0	0	0
2	$1.00 + j0.0$	0.2	0	0	0
3	$1.00 + j0.0$	0	0	0.6	0.25

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## Section-B

4. Incremental fuel cost in rupees per MWh for a plant consisting of two units are :

$$dC_1/dP_{G1} = 0.20 P_{G1} + 40$$

$$dC_2/dP_{G2} = 0.40 P_{G2} + 30$$

and the generator limits are as follows :

$$30 \text{ MW} \leq P_{G1} \leq 175 \text{ MW}$$

$$20 \text{ MW} \leq P_{G2} \leq 125 \text{ MW}$$

Assume that both units are operating at all times. How will the load be shared between the two units as the system load varies over the full range of the load values ? What are the corresponding value of the plants incremental costs ?

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5. State the generation scheduling problem on a bus bar and describe the procedure to find a solution. 15

## Section-C

6. How is automatic generation control achieved ? Draw the block diagram. 15

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

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[P.T.O.]

## Section-D

8. (a) Draw power angle curve and also derive an expression for this. 7.5

(b) Define transient stability. Discuss various assumptions made during analysis of the system. 7.5

9. What do you understand by equal area criteria and plot a  $\delta$  vs  $t$  curve for the stable and unstable system? 15

B. Tech. (EE) 6th Semester (G Scheme)  
Examination, July-2022

**POWER ELECTRONICS**

**Paper-PCC-EE-306-G**

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

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

1. (i) Explain the role of power electronics.
- (ii) Explain brief about Schottky diode.
- (iii) What do you mean by optocoupler ?
- (iv) Explain two pulse converter.
- (v) What are the various power factor improvement technique ?

**Section-A**

2. Write short notes on :

- (i) Power MOSFET
- (ii) DIAC

3. Explain construction and characteristics of GTO in details.

**Section-B**

4. ✓ Explain the various series and parallel connection of SCR. 15
5. ✓ Explain various commutation technique used in SCR. 15

**Section-C**

6. Explain single phase full bridge rectifier with R load. 15
7. Write short notes on : 15
- (i) Dual Converter
  - (ii) Forced Commutated Converter

**Section-D**

8. ✓ Explain 120 degree mode of conduction scheme in SCR. 15
9. Write short note on : 15
- (i) Current source inverter
  - (ii) Step up chopper

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B. Tech. (EE) 6th (Elective-III) Semester  
(G Scheme) Examination, July-2022

POWER SYSTEM PROTECTION

Paper-PEC-EE-06-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. (a) List the essential qualities of a protective relay.
- (b) State the performance Requirements of Protection System.
- (c) What is relay ? Explain its purpose.
- (d) List various types of circuit breakers.
- (e) What is a potential transformer ?
- (f) Define Recovery Voltage. 6×2.5

#### Unit-I

2. With a neat sketch, explain the construction and working principle of a reverse power or directional relay. 15
3. (a) Explain the phenomenon of current chopping. 7.5

3352-P-3-Q-9 (22)

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- (b) With a neat sketch, explain the recovery rate theory and energy balance theory of arc interruption in a circuit breaker. 7.5

**Unit-II**

4. (a) Write a note on over current relay coordination. 7.5  
(b) List the advantages, disadvantages and applications of Buchholz relay. 7.5
5. Explain the over current and earth fault protection applicable to transformer. 15

**Unit-III**

6. (a) Write a short note on Bus bar arrangement schemes. 7.5  
(b) Write a note on relay testing. 7.5
7. Explain the simulation of transients using Electromagnetic transient program. 15

**Unit-IV**

8. (a) State the applications of Wide-Area Measurement systems (WAMS) for improving protection systems. 7.5

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- (b) Write a short note on phasor measurement units. 7.5
9. (a) Explain the term out-of-step protection applicable to system protection. 7.5  
(b) Write a short note on synchro-phasors. 7.5

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B. Tech. (EE) (Elective-V) 6th Semester  
(G Scheme) Examination, July-2022

**CONVENTIONAL AND RENEWABLE ENERGY  
RESOURCES**

**Paper-OEC-EE-08-G**

**Time allowed : 3 hours]**

**[Maximum marks : 75**

**Note :** Attempt five questions in all. Question No. 1 is compulsory. All questions carry equal marks.

1. (a) What are different energy sources present in India ?
- (b) Draw Energy duration curve and Mass curve.
- (c) How is straight line depreciation different from sinking fund depreciation ?
- (d) What consideration govern the selection of sites for Hydro Power Plant ?
- (e) Differentiate between open and closed MHD cycles.
- (f) Name some electrical instruments used in Energy Audit.  $6 \times 2.5 = 15$

**Unit-I**

2. (a) Compare India with other developed countries of world in terms of Renewable Energy resources.  $7.5$

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(b) Draw and explain need of Interconnected generation of power plant. 7.5

3. What are Conventional and Non-Conventional energy sources ? Describe briefly. 15

**Unit-II**

4. (a) Define load factor, capacity factor, utilization factor, diversity factor. 7.5

(b) Draw and explain difference between base load and peak load. 7.5

5. What is Tariff ? What objective should a utility kept in mind while deciding the tariff for consumers ? Also discuss the different types of tariff used for charging consumers of electric energy. 15

**Unit-III**

6. Draw and explain schematic diagram and working of Thermal Power Plant. 15

7. How can solar energy be converted into electrical energy ? Explain with diagram showing elements of such a plant. 15

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**Unit-IV**

8. What is the aim of energy audit ? Explain in detail the various stages in energy audit. 15

9. Write short notes on : 15

(a) Co-generation

(b) Energy Efficient motors

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B. Tech. (EE) (Elective-IV) 6th Semester  
(G Scheme) Examination, July-2022

ADVANCE ELECTRIC DRIVE

Paper-PEC-EE-18-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. (a) What do you mean by selected harmonic elimination ?
- (b) Why we need modelling of induction machine ?
- (c) How you can do direct torque control ?
- (d) What are the various application of SRM ? 15

**Section-A**

2. Explain space vector Pulse Width Modulation (PWM) technique. 15
3. Write short note on : 15
  - (a) Diode rectifier with boost chopper
  - (b) Converter as side rectifier

**Section-B**

4. Explain modelling of 3-phase symmetrical induction machine in actual variable and calculate torque equation. 15
5. Explain vector control of induction machine with control block diagram. 15

**Section-C**

6. Explain modelling of synchronous machine with Park reference frame in actual variable. 15
7. Explain brushless DC motor drive with the help of waveform. 15

**Section-D**

8. Explain operation and control of switched reluctance motor. 15
9. Explain the use of DSP in motion control. 15

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B.Tech. (Bio-Tech) 4th Semester (G Scheme)

Examination, July-2022

ORGANIZATIONAL BEHAVIOUR

Paper- HSMC-02G

Time allowed : 3 hours]

[Maximum marks : 75

*Note : Section-A is compulsory. Attempt total five questions, selecting at least one question from each unit. All questions carry equal marks.*

**Section-A**

1. Attempt all the six questions:  $2.5 \times 6 = 15$
- (i) Explain the difference between management and administration.
  - (ii) What do you mean by Learning?
  - (iii) Explain the scope of Perception.
  - (iv) What do you mean by Organizational Development?
  - (v) Define the concept of conflict management.
  - (vi) Define the importance of organization structure.

**Section-B**

**Unit - I**

2. What do you mean by management? Discuss the characteristic and importance of management in present scenario in India.

3079-P-2-Q-9 (22)

[P. T.O.]

3. What role are performed by the Managers? Explain each role in the context of a business enterprise.

### Unit - II

4. What do you mean by Organizational Behavior? Explain the importance of OB in present scenario in an industrial environment.
5. "Motivation is the core management". Discuss. What can management do to motivate the worker in an industrial organization?

### Unit - III

6. Define communication. Why has communication assumed importance in modern industrial organization? Explain with suitable examples.
7. Give a comprehensive definition of leadership. Enumerate the traits of a good leader.

### Unit - IV

8. Describe the nature and significance of organizational culture. What is an organic culture?
9. Why is change resisted in organization? What can the management do to overcome it?

B. Tech. (EE) 6th Semester (G Scheme)

Examination, July-2022

ELECTRONICS DESIGN LABORATORY

Paper-LC-EE-310-G

Time allowed : 3 hours] [Maximum marks : 50

**Note :** Attempt any five question in all. Question No. 1 is compulsory.

1. (a) Discuss the analog and digital mode of operation of instrument.
- (b) List the advantage of electronic instruments over electrical and mechanical instruments.
- (c) Enlist the various parts of CRO.
- (d) Describe the function of transducer.  $4 \times 2.5 = 10$

**Section-A**

2. (a) Discuss the basic measurement system. Also describe the direct and indirect method of measurement. 4
- (b) Classify the noise in an electronic system. 6
3. Explain with suitable diagrams how does an OP-AMP function as (i) an integrator and (ii) a differentiator.

**Section-B**

4. Discuss the function of each component of digital data acquisition system. 10
5. Explain in detail the functional block diagram of an instrumentation system. 10

**Section-C**

6. Explain the working of blocks of CPLDs and FPGAs. 10
7. Discuss the characteristics of ideal operational amplifier. 10

**Section-D**

8. What do you mean by A/D converter ? Explain the performance and characteristics of A/D converter. 10
9. Write a short note on PCB design and layout. 10