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R-17

Code: 7G264

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

Power System Analysis

(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. For the following data form the bus admittance matrix (Y-bus) by using By Direct inspection Method if the line series impedances are as given.

Bus	code	Impedances
1-2		0.15+j0.6 p.u
1-3		0.1+ j0.4 p.u
1-4		0.15+j0.6 p.u
2-3		0.05+j0.2 p.u
3-4		0.05+j0.2 p.u

14M

OR

- 2. a) What are the different elements in the power system network? 7M
- b) Define the terms i) Graph ii) Sub-graph iii) Tree iv) Co-tree v)Branch vi) Link vii) Cut set 7M

UNIT-II

3. Write step by step algorithm for Gauss-seidel method with PV buses 14M

OR

4. Step by step algorithm for N-R Rectangular Coordinate Method when PV Bus is present. 14M

UNIT-III

- 5. a) Define positive, negative, and zero sequences components in 3 phase systems. 7M
- b) Explain about Sequential components for star connected load. 7M

OR

6. Derive an expression for the fault current for the LL fault
i)with impedance ii)without impedance 14M

UNIT-IV

7. Discuss the various methods of improving steady state stability 14M

OR

8. What is synchronizing power coefficient and how it effects on steady state stability? 14M

UNIT-V

9. Discuss the various methods of improving Transient stability. 14M

OR

10. State and derive swing equation? 14M

Code: 7G265

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

Utilization of Electrical Energy

(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)

Marks CO BL

UNIT-I

1. Suggest with reasons the electric drives used for the following applications.
(i) Rolling mills (ii) textile mills (iii) Cement mills (iv) Paper mills (v) Coal mining (vi) Lift, cranes, Lathes and pumps. 14M CO1 L4

OR

2. a) A 3- induction motor has a ratio of maximum torque to full-load torque as 2:1. Determine the ratio of actual starting torque to full-load torque for Y – starting. Given $R_2 = 0.2$ and $X_2 = 2$. 7M CO1 L2
- b) Determine the ratio of actual starting torque to full-load torque for star–delta starting. If a 3- induction motor has a ratio of maximum torque to full-load torque as 3:1 and the resistance and the reactance are 0.4 and 5 , respectively. 7M CO1 L2

UNIT-II

3. What are the characteristics of heating element? Explain the design of heating element in electric heating. 14M CO2 L3

OR

4. a) Discuss various methods of controlling the temperature in dielectric heating 7M CO2 L3
- b) List out different welding electrodes and explain in detail. 7M CO2 L3

UNIT-III

5. Discuss the laws of illumination and its limitations in actual practice 14M CO3 L3

OR

6. a) Explain the design procedure for good lighting system. 7M CO3 L3
- b) A room with an area of 6 × 9 m is illustrated by ten 80-W lamps. The luminous efficiency of the lamp is 80 lumens/W and the coefficient of utilization is 0.65. Find the average illumination. 7M CO3 L3

UNIT-IV

7. a) A 230-V, 10-HP, and DC shunt motor with $R_a = 0.2$ and $R_{sh} = 80$, runs at 1000 rpm on full load. The efficiency on the full load is 80%. If the speed is to be raised to 1200 rpm keeping load constant, determine extra resistance to be added in the field circuit. Assume 1 HP = 736 W. 7M CO4 L3

- b) Write the advantages and disadvantages of electric traction. 7M CO4 L2

OR

8. a) Write a short note on adhesive weight. 7M CO4 L2
- b) Explain why a DC series motor is ideally suited for traction purposes? 7M CO4 L2

UNIT-V

9. a) Enumerate the history of hybrid vehicles 7M CO5 L3
- b) Explain the Energy Savings Potential of Hybrid Drive trains 7M CO5 L2

OR

10. a) Explain the impact of modern drive trains on energy supplies 7M CO5 L3
- b) Explain regenerative braking applied in electric vehicles 7M CO5 L3

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

Microprocessors and Microcontrollers

(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

Marks CO BL

1. a) Explain the following instruction set of 8086 microprocessor with examples: (i) Bit Manipulation Instructions (ii) Program Execution Transfer Instructions (iii) Interrupt Instructions (iv) Arithmetic Instructions. 7M CO1 L2
- b) Write an assembly language program in 8086 to sort the given 'N' numbers in ascending order. 7M CO1 L3

OR

2. a) Explain various Addressing modes of 8086 microprocessor. 7M CO1 L2
- b) Write an 8086 ALP to find the sum of numbers in the array of 10 elements. 7M CO1 L3

UNIT-II

3. a) Draw the ADC interface to 8086 using 8255 PPI. With a neat program, explain how analog to digital conversion is carried out by 8086 microprocessor. 7M CO2 L2
- b) Explain the pin diagram of ADC 0808/0809 7M CO2 L2

OR

4. a) Explain the vectored interrupt table of 8086 processor? 7M CO2 L2
- b) Discuss 8255 mode-0 operations and determine the control word with an example. 7M CO2 L2

UNIT-III

5. a) Explain about necessity of communication interfaces and 8251 interfacing 7M CO3 L2
- b) Draw an internal architecture of USART 8251 and explain its different status and modes and control formats neatly. 7M CO3 L2

OR

6. a) What are the important features of 8251 7M CO3 L1
- b) Discuss the overrun error and framing error with reference to 8251 7M CO3 L2

UNIT-IV

7. a) Explain about Timers and serial communication features of 8051 7M CO4 L2
- b) Discuss about the organization of Internal RAM and Special function registers of 8051 Microcontroller in detail. 7M CO4 L2

OR

8. Explain instruction set of 8051 microcontroller with appropriate examples. 14M CO4 L2

UNIT-V

9. a) Discuss about the I/O ports, Timers and ADC of Arduino 7M CO5 L2
- b) Mention the differences between 16-bit microcontroller and 8-bit microcontroller. 7M CO5 L5

OR

10. a) Explain the features and applications of ARM9 microcontroller. 7M CO5 L2
- b) Draw the block diagram of ARDUINO microcontroller and explain its main features 7M CO5 L2

Important Note: 1. On completing your answers. Compulsorily draw diagonal cross line on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 32+8=40, will be treated as malpractice.

Hall Ticket Number :

R-17

Code: 7G16D

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

Object Oriented Programming Concepts

(Common to EEE & ECE)

Max. Marks: 70

Time: 3 Hours

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

UNIT-I

1. a) Write short note on destructor. Explain with suitable example. 7M
b) Explain merits and demerits of Object Oriented methodology. 7M

OR

2. a) Define structure. Explain with any suitable example program. 8M
b) List and explain data types in C++. 6M

UNIT-II

3. a) When do you use virtual base class? Explain with suitable example. 6M
b) Explain function overloading and operator overloading with examples. 8M

OR

4. a) Define Inheritance. Write a C++ program to demonstrate multiple inheritances. 7M
b) What is mean by Overloading? Explain about function overloading with suitable program. 7M

UNIT-III

5. a) What is an array? Discuss various array definitions in java with an example. 7M
b) Discuss about primitive data types. 7M

OR

6. a) Define Class & Object in Java? Explain with suitable example. 7M
b) Write a java program to print first N Fibonacci Series using While loop. 7M

UNIT-IV

7. a) How to define a user exception in a program? Illustrate with an example. 7M
b) Write the steps involved in adding a class to a package. 7M

OR

8. a) What is a Thread? How are threads created? 7M
b) Write an example program to create threads using Thread class. 7M

UNIT-V

9. a) List the types of character streams in java. Explain any four character streams with a suitable example. 8M
b) Demonstrate the passing parameters to the applet with example. 6M

OR

10. a) What is an Applet? Explain how to create an Applet. 7M
b) What is multithreading? What are the priorities given for multithreading. 7M
