Hall Ticket Number :										

R-15

Code: 5G262

III B.Tech. II Semester Supplementary Examinations July / August 2021

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)

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			Marks	CO	Blooms Level
		UNIT–I			
1.		With a neat block diagram explain the architecture of 8086 in minimum mode operation and also explain the timing diagram for input and output transfer on a minimum mode	14M	CO1	L2
		OR			
2.	a)	Explain the memory segmentation and instruction Queue of 8086.	7M	CO1	L2
	b)	Write an assembly language program (ALP) which counts the number of A's and a's in given string of characters.	7M	CO1	L4
		UNIT–II			
3.	a)	Explain about 8255PPI various modes of operation	7M	CO2	L2
	b)	Explain 8257 architecture and also explain the need of DMA	7M	CO2	L2
		OR			
4.		What is interrupt routine and interrupt routine Explain the interrupt sequence for 8086 microprocessor and interrupt pointer	14M	CO2	L2
		UNIT–III			
5.	a)	Explain the Asynchronous and Synchronous modes data transfer schemes	7M	CO3	L2
	b)	Discuss about 8251 architecture and interfacing.	7M	CO3	L4
		OR			
6.	a)	Draw the block diagram and explain the operations of 8251 serial communication	7M	CO3	L2
	b)	Explain about necessity of communication interfaces and 8251 interfacing	7M	CO3	L2
		UNIT–IV			
7.	a)	Explain the I/O pin ports and circuit details of 8051 microcontroller	7M	CO4	L2
	b)	Explain the on chip timer modes of 8051 micro controller	7M	CO4	L2
		OR			
8.	a)	Explain about memory organization in 8051 microcontroller	7M	CO4	L2
	b)	Discuss the various type of addressing modes with suitable example in 8051 micro controller	7M	CO4	L4
		UNIT–V			
9.	a)	Explain in detail about ARM micro controller features and applications	7M	CO5	L2
	b)	Discuss about ARM 7 and ARM 9 microcontrollers	7M	CO5	L4
		OR			
10.	a)	Explain in detail about the architecture of Arduino	7M	CO5	L2
	b)	Discuss about the I/O ports, Timers and ADC of Arduino.	7M	CO5	

END

Hall Ticket Number :										

R-15

Code: 5G466

III B.Tech. II Semester Supplementary Examinations July/Aug 2021

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)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	How does object oriented approach differ from object based approach? Give the applications of OOP.	7M	CO1	L1
	b)	What are recursive constructors? Explain with an example	7M	CO1	L1
		OR			
2.	a)	What are merits and demerits of OO Methodology?	7M	CO1	L1
	b)	How data and functions are organized in Object Oriented Program? Explain with an example.	7M	CO1	L1
		UNIT–II			
3.	a)	What is function overloading? What are the principles of function overloading?	7M	CO2	L1
	b)	What is inheritance? Present the advantages and disadvantages of inheritance	7M	CO2	L1
		OR			
4.	a)	Explain operator overloading with the implementation of complex numbers.	7M	CO2	L2
	b)	Illustrate runtime polymorphism using virtual functions.	7M	CO2	L2
		UNIT–III			
5.	a)	What are the primitive data types in Java? Write about type conversions.	7M	CO3	L1
	b)	Write a java program to illustrate the usage of conditional statements and looping statements.	7M	CO3	L3
		OR			
6.	a)	Write a java program to illustrate the increment & decrement operators, shift operators and ternary operator.	7M	CO3	L3
	b)	How to assign the values to the variables in the class during the time of creation of an object to that class? Explain with an example.	7M	CO3	L1
		UNIT–IV			
7.	a)	With a suitable Java program explain user-defined exception handling.	7M	CO4	L3
	b)	How to define a package? How to access, import a package? Explain with examples.	7M	CO4	L1
		OR			
8.	a)	Explain the various access specifiers are used in java.	7M	CO4	L2
	b)	Explain multilevel inheritance with the help of abstract class in your program	7M	CO4	L2
		UNIT–V			
9.	a)	What is the difference between a thread and a process?	7M	CO4	L1
	b)	Explain the life cycle of an applet.	7M	CO4	L2
		OR			
10.	a)	Write a program to explain thread priorities usage.	7M	CO4	L3
	b)	Write an Applet to draw a smiley picture accept user name as a parameter and display welcome message.	7M	CO4	L3

END

Hall Ticket Number :										

R-15

Code: 5G261

III B.Tech. II Semester Supplementary Examinations July / August 2021

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)

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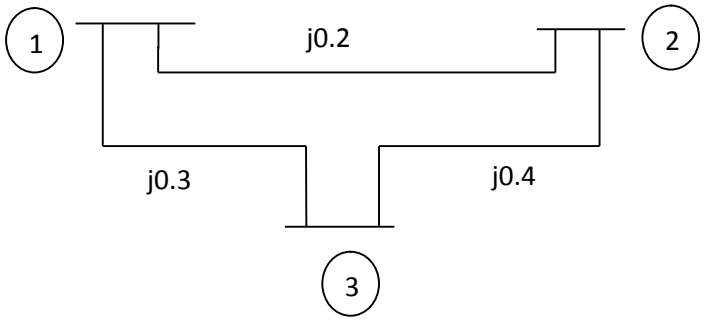
UNIT–I

1. Form Z_{BUS} for the following power system .Take bus-1 as reference bus.



14M

OR

2. Form Ybus for the network by singular transformation:

Element	5-1	5-2	1-2	2-3	1-4	3-6	4-6
Positive sequence reactance	0.04	0.05	0.04	0.03	0.02	0.07	0.10

14M

UNIT–II

3. Explain the step by step computational procedure for the Gauss-Seidel method of load flow studies. 14M

OR

4. From basic fundamentals, obtain the elements of Jacobian matrix in newton Raphson method. 14M

UNIT–III

5. a) What are symmetrical components? Explain the symmetrical component transformation. 7M

   b) What is meant by sequence impedance? Explain the sequence network of an unloaded generator. 7M

OR

6. Derive the expression for fault current when the power network is subjected to line to ground fault. 14M

UNIT–IV

7. a) Describe the concept of steady state stability power limit and synchronizing power coefficient. 7M

   b) Discuss the various methods for improving steady state stability. 7M

OR

8. Obtain the power angle cure from fundamentals and describe its application to determine power system stability. 14M

UNIT–V

9. Derive the expression for equal area criterion with illustration to determine transient stability of power system. 14M

OR

10. Explain the procedure to determine transient stability using swing equation by point by point method. 14M

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Hall Ticket Number :										

R-15

Code: 5G263

III B.Tech. II Semester Supplementary Examinations July/August 2021

Power System Operation and Control

(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)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Incremental fuel costs in Rs/MWh for 2units in a plant are given by $dc_1/dp_1 = 0.15P_1+25$, $dc_2/dp_2=0.12P_2+15$. The minimum and maximum loads on each unit are to be 20MW and 125 MW respectively. Determine IFC and allocation of load between units for the minimum cost and load is 150MW. Assume both the units are operating.	8M		VI
	b)	Derive the coordination equation without losses?	6M		III
		OR			
2.	a)	The fuel input per hour of plant 1 and 2 are given as $C_1=0.2P_1^2+40P_1+120$ Rs/h $C_2=0.25P_2^2+30P_2+150$ Rs/h Determine the economic operating schedule and the corresponding cost of generation if the max and min loading on each unit is 100MW and 25MW, the demand is 180 MW and transmission losses are neglected. If the load is equally shared by both the units, determine the saving obtained by loading the units as per equal incremental production cost.	10M		VI
	b)	What is a penalty factor in economic scheduling? Give its significance.	4M		II
		UNIT–II			
3.	a)	Explain about Short term hydro thermal co-ordination with necessary equations	10M		III
	b)	What is the need of optimal scheduling of hydrothermal system?	4M		II
		OR			
4.		With flowchart, explain the dynamic programming method to solve unit commitment problem.	14M		V
		UNIT–III			
5.	a)	With a neat diagram explain briefly different parts of turbine speed governing system?	8M		V
	b)	Derive the generator load model and represent it by a block diagram.	6M		II
		OR			
6.	a)	Draw the block diagram representation of IEEE type 1 excitation system model	7M		II
	b)	Explain the block diagram representation of an isolated power system with diagram.	7M		III

UNIT–IV

7.	a)	Explain different components of AGC system with a neat diagram and the working mechanism	10M	IV
	b)	A single area system has the following data Speed regulation, R =4 Hz/ p.u MW Damping coefficient, B =0.1 p.u MW/Hz, When a load change by 2%, determine AFRC and static frequency error.	4M	VI

OR

8.	a)	Two generators rated 15 MW and 4 MW are operating in parallel. The droop characteristics of their governors are 3% and 4% respectively from no load to full load. Assuming that the generators are operating at 50 Hz at Full load. How would a load of 14 MW be shared between them? What will be the system frequency at this load? Assume free governor action.	10M	III
	b)	What is meant by tie–line bias control?	4M	II

UNIT–V

9.	a)	What are the merits and demerits of different types of compensating equipment for transmission system?	10M	II
	b)	Explain the specifications of load compensation	4M	V

OR

10.	a)	Write the various objectives of series and shunt compensation	6M	I
	b)	Explain the uncompensated and compensated transmission lines.	8M	V

END

Hall Ticket Number :										

R-15

Code: 5G264

III B.Tech. II Semester Supplementary Examinations July/August 2021

Switch Gear and Protection

(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)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Explain the construction and working of air break circuit breaker.	7M	1	I &II
	b)	In a 132kV system, the reactance and capacitance up to the location of circuit breaker is 5Ω and 0.003μF respectively. Calculate value of critical resistance for suppressing transient oscillations.	7M	1	I &II
		OR			
2.	a)	What are the different ratings of circuit breaker? Explain any one in detail.	7M	1	I
	b)	Why SF_6 gas is preferred in circuit breakers?	7M	1	I
		UNIT–II			
3.	a)	Describe any one type of electromagnetic attracted armature relay.	7M	2	I & III
	b)	Derive the torque equation for the induction type relays.	7M	2	I & III
		OR			
4.	a)	Explain the working principle of directional power relay.	7M	2	I &II
	b)	What is the procedure of setting I.D.M.T. relay? What initial data is required? How is the directional relay different than simple I.D.M.T. relay?	7M	2	I &II
		UNIT–III			
5.	a)	Explain any one protection scheme of generator.	7M	3	II &III
	b)	Derive the expression for the percentage of winding unprotected in the restricted earth fault protection.	7M	3	II &III
		OR			
6.	a)	Draw and explain the construction and working of Buchholtz relay. Against which faults Buchholtz relay gives the protection? State its advantages and disadvantages.	7M	3	III & V
	b)	A three phase transformer of 220/11,000 line volts is connected in star- delta and the protective transformers on 220V side have a current ratio of $600/\frac{5}{\sqrt{3}}$. What should be C.T. ratio on 11,000 v side and how shall they be connected?	7M	3	III & V
		UNIT–IV			
7.	a)	Explain the drawbacks of time graded protection.	7M	3	II
	b)	Explain current graded protection for radial feeders	7M	3	II
		OR			
8.	a)	Explain differential protection of bus bar.	7M	3	II
	b)	Explain various abnormalities occurring in transmission lines.	7M	3	II
		UNIT–V			
9.	a)	Derive the expression for the reactance of the Peterson coil.	7M	4	II & III
	b)	Calculate the reactance of a coil suitable for a 33kV, 3-phase transmission system of which the capacitance to earth of each conductor is 4.5 μF?	7M	4	II & III
		OR			
10.	a)	How do earthing screen and ground wires provide protection against direct lighting strokes?	7M	4	I
	b)	What is a surge diverter? What is basic principle of surge diverter? How are they classified?	7M	4	I

END