

Hall Ticket Number :

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**R-15**

**Code: 5G262**

III B.Tech. II Semester Regular Examinations May 2018

**Microprocessors and Microcontrollers**

( Electrical & Electronics Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) Describe the Pin description and illustrate the Pin diagram of 8086 $\mu$ P. 7M
- b) Distinguish Minimum and maximum mode of operations of 8086 $\mu$ P. 7M

**OR**

2. a) Explain about data related addressing modes with examples 8M
- b) Explain Macros with an example. 6M

**UNIT-II**

3. a) Explain the control word register of 8255 PPI. 6M
- b) Describe the interface of A/D Converter using 8255 with 8086  $\mu$ P. 8M

**OR**

4. Explain the I/O Interfacing methods of 8086  $\mu$ P. 14M

**UNIT-III**

5. a) Illustrate the basic structure of SRAM and DRAM cells 6M
- b) Need for DMA? Explain the master and slave modes of DMA. 8M

**OR**

6. a) Explain about Memory interfacing to 8086 with an example. 7M
- b) Explain about architecture of 8257. 7M

**UNIT-IV**

7. a) Explain about Interrupt structure of 8086 6M
- b) Describe TTL to RS232C and RS232C to TTL conversion. 8M

**OR**

8. a) Describe 8251 USART architecture. 8M
- b) Describe the signals of Serial communication standard-RS-232C. 6M

**UNIT-V**

9. a) Describe the instruction set of 8051 $\mu$ C. 8M
- b) List out the special function registers of 8051 $\mu$ C. 6M

**OR**

10. a) Draw the pin diagram 8051 $\mu$ C. 6M
- b) Describe the addressing modes 8051 $\mu$ C. 8M

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Hall Ticket Number :										
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<b>R-15</b>
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**Code: 5GA61**

III B.Tech. II Semester Regular Examinations May 2018

**Management Science**

( Electrical & Electronics Engineering )

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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<b>UNIT-I</b>
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1. Define Management? What are the functions of Management? Explain? 14M

**OR**

2. a) Evaluate Line and Staff Organisation? 7M

b) Evaluate Matrix Organisation? 7M

<b>UNIT-II</b>
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3. What is Production? What are the methods of Productivity? Explain? 14M

**OR**

4. What is Marketing and briefly explain the functions of marketing? 14M

<b>UNIT-III</b>
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5. Define selection? What are the different techniques of selection followed by a personnel manager while employing the personnel in an organization? 14M

**OR**

6. What is Training? Briefly explain the different methods of training? 14M

<b>UNIT-IV</b>
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7. Define Financial Management? Explain the objectives of Financial Management? 14M

**OR**

8. The following details relate to a small project with the help of which compute the probability of completion of project within scheduled time. The expected time of each activity is as follows:

Sl. No.	1	2	3	4	5	6	7	8	9
Activity	1-2	1-3	2-4	3-4	4-5	5-6	3-5	5-7	6-7
t <sub>e</sub>	6	8	7	12	3	5	7	11	10

14M

**UNIT-V**

9. Give a brief note on Total Quality Management. State the main elements of TQM? 14M

**OR**

10. What is Just-In-Time? Explain its features, advantages and disadvantages? 14M

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Code: 5G466

III B.Tech. II Semester Regular Examinations May 2018

**Object Oriented Programming Concepts**

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) Explain the features of Object Oriented Programming and mention the benefits of OOP over structured programming. 7M
- b) Explain passing reference variables as arguments to functions. 7M

**OR**

2. a) Compare Object based programming and Object Oriented Programming. Explain how data and functions are organized in OOP. 7M
- b) Mention the different types of constructors. Elaborate parameterized constructors through an example program. 7M

**UNIT-II**

3. a) What is Virtual base class? Discuss the necessity of virtual base class in writing a C++ program 8M
- b) Discuss the following C++ concepts with suitable examples. 6M
- i. friend function
- ii. this pointer

**OR**

4. a) Define Function Overloading. Write a C++ program to demonstrate Operator Overloading. 7M
- b) Write a function using reference variables as arguments to swap the values of pair of integers. 7M

**UNIT-III**

5. a) List at least five major C++ features that were intentionally removed from Java. Explain how is Java more secure than other languages? 7M
- b) Mention the five types of tokens in Java. Explain the derived data types in Java. 7M

**OR**

6. a) Write a program to find the number of and sum of all integers greater than 100 and less than 200 that are divisible by 5. 7M
- b) Write a program in Java to print first m Fibonacci series using while loop. 7M

**UNIT-IV**

7. a) Write about the frequently used Java API packages. Write a program to import classes from package 1 to package 2. 7M
- b) Write the steps involved in adding a class to a package. 7M

**OR**

8. a) Discuss the process of throwing own exceptions in Java. 7M
- b) Explain various keywords in exception handling with Java. 7M

**UNIT-V**

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

**OR**

10. a) Explain the life cycle of applet. 8M
- b) Demonstrate the creation of an applet using an example program. 6M

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**Code: 5G261**

III B.Tech. II Semester Regular Examinations May 2018

**Power System Analysis**

( Electrical & Electronics Engineering )

Max. Marks: 70

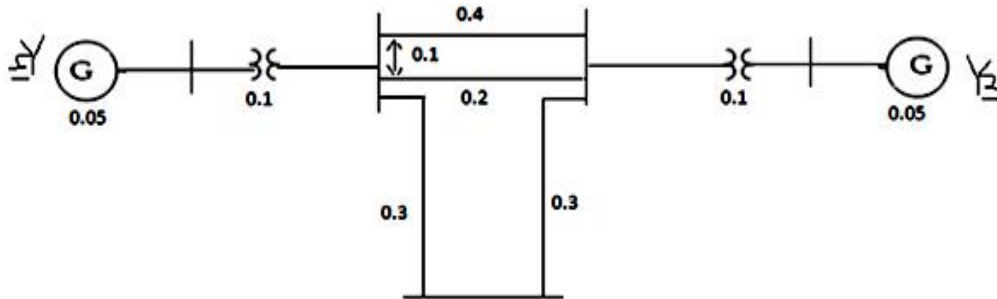
Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. For the network shown in fig below form the network matrix  $Y_{BUS}$  by using singular transformation.



14M

**OR**

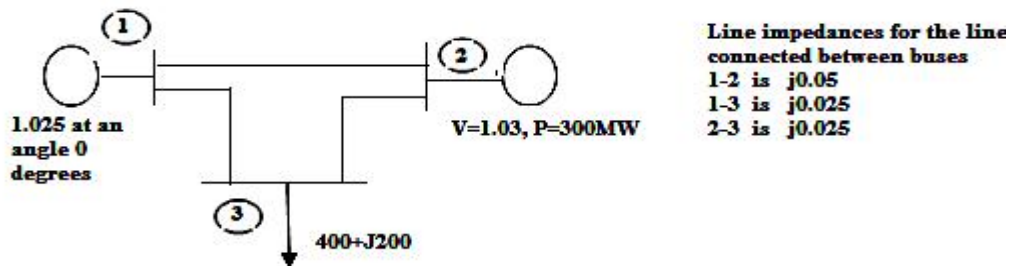
2. a) From fundamentals derive the expressions for the step by step algorithm to form  $Z_{BUS}$  when a link  $p - q$  is added to the partial network. 10M  
 b) Define primitive network. Write the performance equations of a primitive network. 4M

**UNIT-II**

3. a) Compare different load flow techniques. 6M  
 b) Write an algorithm for Newton-Raphson load flow using rectangular coordinates method. 8M

**OR**

4. The impedances are calculated in 100MVA base. Perform NR load flow for first iteration by using rectangular Coordinates method and consider bus 1 as slack bus for figure below.



14M

**UNIT-III**

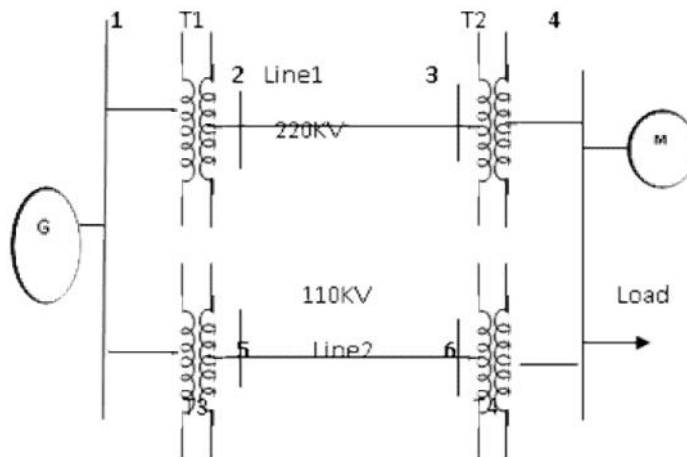
5. a) Derive the expression for fault current for a LG fault at the terminals of an unloaded alternator. Show the interconnection of sequence networks. 7M  
 b) A 25MVA, 11kV Synchronous Generator has positive, negative and zero sequence reactances of 12%, 12% and 8% respectively. The generator neutral is grounded through a reactance of 5%. A Single line to Ground fault occurs at the generator terminals. Determine fault current and line to line voltages. Assume that the generator is unloaded before fault. 7M

**OR**

6. a) The one line diagram of a 3-phase power system is shown in figure. Draw the reactance diagram with all impedances including the load impedance marked in per unit. Select a common base of 100MVA and 22KV on the generator side.

G : 90MVA	22KV	$x=18\%$
T1:50MVA	22/220KV	$x=10\%$
T2: 40MVA	220/11KV	$x=6\%$
T3: 40MVA	22/110KV	$x=6.4\%$
T4: 40MVA	110/11KV	$x=8\%$
M: 66.5MVA	10.45KV	$x=18.5\%$

Lines 1 and 2 have reactances of  $48.4\Omega$  and  $65.43\Omega$  respectively. The three phase load at bus 4 absorbs 57MVA at 0.6pf lag at 10.45KV.



- b) Define per unit system and write the advantages of per unit system.

#### UNIT-IV

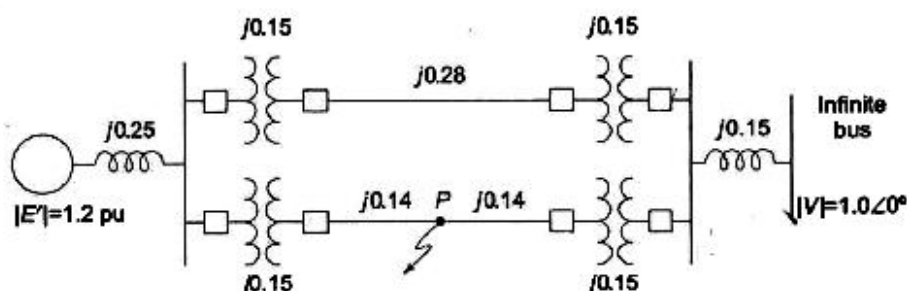
7. a) Explain various methods of improving steady state stability. 7M  
 b) Derive the power angle equation, draw the power angle curve and analyze. 7M

OR

8. a) Find the steady state power limit of a system consisting of a generator equivalent reactance 0.5 pu connected to an infinite bus through a series reactance of 1.0 pu. The terminal voltage of the generator is held at 1.2 pu and the voltage of the infinite bus is 1.0 pu. 10M  
 b) Explain synchronizing power coefficient. 4M

#### UNIT-V

9. Explain point by point method of solving Swing equation by deriving necessary equations. 14M
- OR
10. Find the critical clearing angle for the system shown in following fig. for a 3-phase fault at the point P. The generator is delivering 1.0pu power under pre fault conditions.



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Code: 5G263

III B.Tech. II Semester Regular Examinations May 2018

**Power System Operation and Control**

(Electrical and Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer all five units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) Explain the following terms with reference to power plants:  
(i) heat input – power output curve (ii) heat rate input (iii) incremental input and (iv) generation cost . 8M
- b) Obtain the condition for optimum operation of a power system with 'n' plants including the effect of transmission losses. 6M

**OR**

2. a) A system consists of two generating plants with fuel costs of:  
 $C_1=0.03P_1^2+15P_1+1.0$   
 $C_2=0.04P_2^2+21P_2+1.4$   
The system operates on economic dispatch with 120MW of power generation by each plant. The incremental transmission loss of plant-2 is 0.15. Find the penalty factor of plant-1. 8M
- b) Explain various factors to be considered in allocating generation to different power stations for optimum operation. 6M

**UNIT-II**

3. Explain and write the mathematical formulation for optimal scheduling of Hydro thermal system. Explain any one solution technique of solving equations with the help of an algorithm. 14M

**OR**

4. What is meant by optimal power flow solution? Write the equations describing an optimal power flow problem. How inequality constraints are considered on dependent variables and on control variables. 14M

**UNIT-III**

5. a) Write the modeling equations of turbine speed governing system. Develop the block diagram of turbine speed governing mechanism with first order equations. 7M
- b) Construct a Block Diagram for Generator Load Model and find out the transfer function. 7M

**OR**

6. a) Derive the first order turbine model. Represent the model in block diagram. 7M
- b) Describe various elements that are to be considered in modeling of an excitation system. 7M

**UNIT-IV**

7. a) Draw the LFC block diagram of an isolated power system. Write the dynamic response curve of change in frequency for a step change in load. 7M
- b) Derive the expression for change in tie line power and draw its block diagram? 7M

**OR**

8. a) Write the state space representation of AGC for single area. 7M
- b) How does load frequency control is achieved by considering economic dispatch. 7M

**UNIT-V**

9. a) Describe the performance of uncompensated transmission lines. 7M
- b) Describe the constructional features of a synchronous capacitor. Explain its operation and discuss various applications in power system operation. 7M

**OR**

10. a) Explain the phenomenon of sub synchronous resonance in power system operations and suggest remedies to overcome this problem. 7M
- b) Explain series and shunt compensation of lines and discuss their effect on the surge impedance loading of the lines. If shunt compensation is 100%, what happens to SIL and voltage profile. 7M

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Hall Ticket Number :

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**R-15**

**Code: 5G264**

III B.Tech. II Semester Regular Examinations May 2018

**Switch Gear and Protection**

( Electrical and Electronics Engineering )

Max. Marks: 70

Time: 3 Hours

Answer *all five* units by choosing one question from each unit ( 5 x 14 = 70 Marks )

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**UNIT-I**

1. a) Describe the terms: (i) restriking voltage (ii) recovery voltage (iii) RRRV 7M  
b) Outline the construction, principle of operation and application of vacuum circuit breaker. 7M

**OR**

2. a) Derive an expression for the restriking voltage in terms of system voltage, inductance and capacitance, across a C.B. contact when a 3-phase fault takes place. Assume the neutral of the system to be solidly grounded. 7M  
b) Discuss the process of current chopping in circuit breakers. How to avoid it? 7M

**UNIT-II**

3. a) What is a protective relay? Discuss the functional characteristics of a protective relay. 7M  
b) Classify the various types of over current relays and give their applications along with approximate characteristics. 7M

**OR**

4. a) What is universal torque equation? Using this equation derive the following characteristics:  
(i) impedance relay (ii) reactance relay (iii) mho relay 7M  
b) Discuss the merits and demerits of static relays over electromechanical relays. 7M

**UNIT-III**

5. a) Describe the construction, principle of operation and applications of Buchholz relay. 7M  
b) For a 10MVA, 132KV/6.6KV power transformer with delta-star connections, obtain the number of turns each current transformer should have, for the differential scheme to circulate a current of 5A in the pilot wires. 7M

**OR**

6. a) Discuss about restricted earth fault protection for alternators. 7M  
b) Describe the rotor protection against earth fault. 7M

**UNIT-IV**

7. a) List various schemes of protection of feeders and compare their performance. 7M  
b) Discuss the schemes of protection for a parallel feeder fed from (i) one end (ii) both ends. 7M

**OR**

8. a) What is meant by 3-zone protection? Draw the schematic diagrams of contact circuits and principle of operation for (i) short length lines (ii) medium length lines. 7M  
b) Discuss the protection scheme for bus bars. 7M

**UNIT-V**

9. a) Outline the advantages of grounding of neutral of the system. 7M  
b) Discuss the phenomenon of 'Arcing grounds' and suggest the method to minimize it. 7M

**OR**

10. a) What are BILs? Discuss their significance in power system studies. 7M  
b) Describe the construction, principle of operation and application of Valve type lightning arrester. 7M

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