Code: 4G465

R-14

III B.Tech. II Semester Supplementary Examinations May 2018
Computer System Architecture
(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) Convert the following to indicates bases:
    i) $(BAED)_{16}$ to   ($)_2$
    ii) $(101010.11)_2$ to ($)_{10}$
    iii) $(4361)_{10}$ to   ($)_8$
    iv) $(195)_{10}$ to   ($)_2$ 8M
   b) Explain functional units of a computer   6M

OR

2. a) What are the phases of instruction cycle? Explain each.   8M
   b) How to measure the performance of computer? Explain.   6M

UNIT–II

3. a) Construct 4-bit adder-subtractor with neat diagram.   10M
   b) What is a register? Explain register transfer using a block diagram and timing diagram?   4M

OR

4. a) Draw and explain the block diagram of stored program organization?   10M
   b) What is an instruction? Explain the operations of different memory reference instructions?   4M

UNIT–III

5. a) Explain in detail about addressing modes with example.   9M
   b) Describe in brief control memory.   5M

OR

6. a) Draw and explain Booths multiplication flow chart with an example.   10M
   b) Write about address sequencing.   4M

UNIT–IV

7. a) List and explain different asynchronous data transfer modes.   7M
   b) What is an Input-Output processor? Explain the need for Input-Output processor   7M

OR

8. a) Discuss the methods in Cache Write? Explain its importance.   7M
   b) Discuss Virtual Memory Management technique. Explain the application of Virtual Memory   7M

UNIT–V

9. a) Explain RISC pipeline with example   6M
   b) Discuss pipeline for floating-point addition and subtraction with neat diagram   8M

OR

10. a) Explain the characteristics of multiprocessors   4M
    b) Discuss Interconnection sturctures in detail.   10M

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Code: 4GA61

R-14

III B.Tech. II Semester Supplementary Examinations May 2018
Managerial Economics and Financial Analysis
(Common to EEE & CSE)

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. Explain how Managerial Economics is linked with other academic disciplines. — 14M

OR

2. a) Define the Law of Demand. What are its Exceptions? — 4M

   b) What do you understand by "Demand Forecasting"? Explain any four methods of "Demand Forecasting". — 10M

UNIT–II

3. a) What do you mean by Isoquants? Explain their Features. — 6M

   b) Discuss about Cobb-Douglas Production Function in detail. — 8M

OR

4. a) What is BEP? — 2M

   b) A firm has a Fixed Cost of Rs 50,000; Selling Price per unit is Rs 50 and Variable Cost per unit is Rs 25.Present level of production is 3,500 units.
   (i) Determine Break-Even Point (BEP)in terms of units and sales value
   (ii) Calculate Margin of Safety.
   What is the change in BEP and Margin of Safety, if Fixed Cost increases from Rs 50,000 to Rs 60,000. — 12M

UNIT–III

5. a) Differentiate between Perfect and Imperfect Markets. — 8M

   b) Illustrate the price determination in case of Monopoly. — 6M

OR

6. a) What is the difference between Private Limited Company and Public Limited Company? — 6M

   b) What do you understand by Joint Stock Company? Explain different stages in the formation of a Joint Stock Company. — 8M

UNIT–IV

7. a) Define Capital. Explain its Significance and Types of Capital. — 8M

   b) What are the main features of different sources of short- term finance? — 6M

OR

8. a) Explain the important features of Capital Budgeting. — 4M

   b) A firm is considering 3 Projects each with an initial investment of Rs 20,000 and a life of 4 years. The following is the list of estimated Cash Inflows after taxes**:**

Estimated Cash Inflows Proposals for I,II &III

Year	Proposal - I (Rs)	Proposal – II (Rs)	Proposal – III (Rs)
1	12,500	11,750	13,500
2	12,500	12,250	12,500
3	12,500	12,500	12,250
4	12,500	13,500	11,750
Total (Rs)	50,000	50,000	50,000

   Determine Accounting Rate of Return on (a) Average Capital and (b) Original Capital Employed. — 10M

UNIT–V

9. a) Explain the basic accounting concepts and conventions. Give examples. — 10M

   b) What is Journal? How is it ruled? — 4M

OR

10. a) As a financial analyst, what precautions would you take while interpreting ratios meaning-fully? — 8M

   b) A firms sold goods worth Rs1,00,000 and its gross profit is 20% of sales value. The inventory at the beginning of the year was Rs 32,000 and at the end of the year was Rs14,000. Compute inventory turnover ratio and also the inventory holding period. — 6M

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R-14

Code: 4G263

III B.Tech. II Semester Supplementary 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 8086µP.   7M
    b) Distinguish Minimum and maximum mode of operations of 8086µP.   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 µP.   8M

OR

4. Explain the I/O Interfacing methods of 8086 µP.   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 8051µC.   8M
    b) List out the special function registers of 8051µC.   6M

OR

10. a) Draw the pin diagram 8051µC.   6M
    b) Describe the addressing modes 8051µC.   8M

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Code: 4G261

III B.Tech. II Semester Supplementary Examinations May 2018

Power System Analysis

(Electrical & Electronics Engineering)

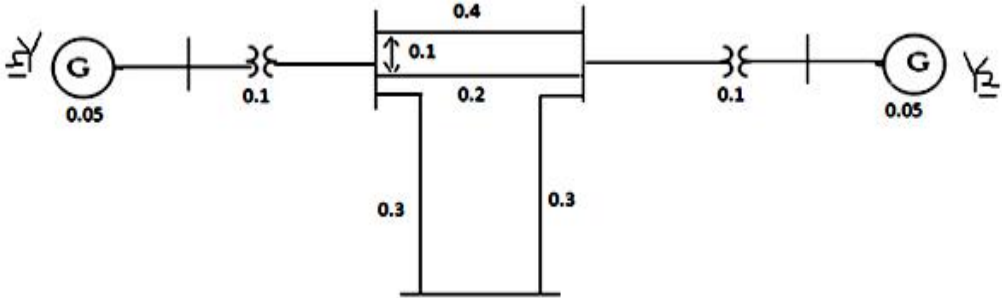Max. Marks: 70   Time: 3 Hours

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.

Line impedances for the line connected between buses
1-2 is j0.05
1-3 is j0.025
2-3 is j0.025
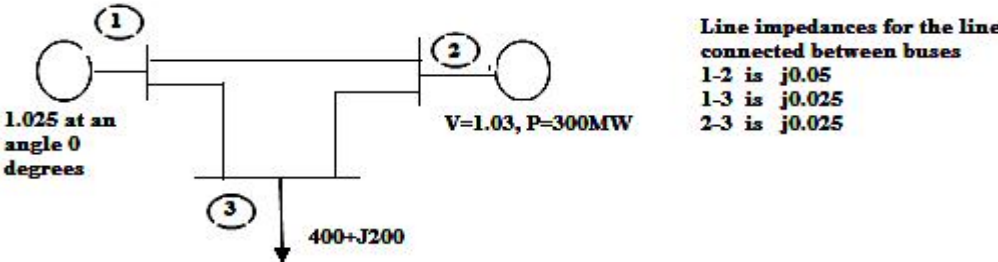
14M

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 48.4Ω and 65.43Ω respectively. The three phase load at bus 4 absorbs 57MVA at 0.6pf lag at 10.45KV.

10M
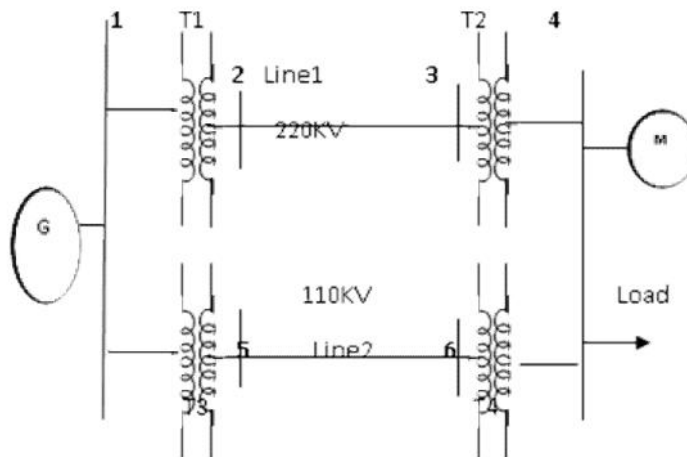
b) Define per unit system and write the advantages of per unit system.   4M

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.

14M

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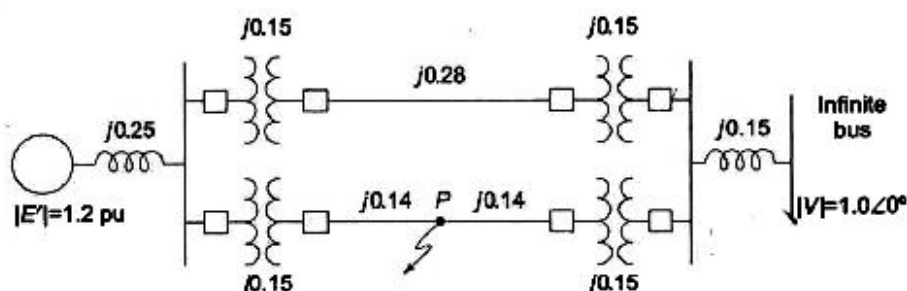
Code: 4G264

III B.Tech. II Semester Supplementary 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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Code: 4G262

R-14

III B.Tech. II Semester Supplementary Examinations May 2018
Utilization of Electrical Energy
(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) Discuss the characteristics of DC series Motor and 3- induction motor   7M

   b) Write about the various types of industrial loads with their examples and load characteristics.   7M

OR

2. a) How are the electric drives classified? Explain.   7M

   b) A d.c. series motor drives a load, the torque of which varies as the square of the speed. The motor takes current of 30 amps, when the speed is 600 r.p.m. Determine the speed and current when the field winding is shunted by a diverter, the resistance of which is 1.5 times that of the field winding. The losses may be neglected.   7M

UNIT–II

3. a) What are the characteristics of heating element? Explain the design of heating element in resistance welding.   6M

   b) Explain the principle of Induction heating, What are the applications of induction heating?   8M

OR

4. a) What is the fundamental difference between electric arc welding and resistance welding? Explain?   8M

   b) Compare AC and DC type of Welding Methods?   6M

UNIT–III

5. a) What is flood lighting and where it is used? Explain briefly the principles employed in the design of flood lighting installations.   6M

   b) Two lamp posts are 14 meters apart and are fitted with 200 C.P. lamp each at a height of 5 meter above the ground. Calculate
      (i) Illumination mid-way between them.
      (ii) Illumination under each lamp   8M

OR

6. a) State and describe various types of lighting schemes.   4M

   b) Compare Fluorescent, Mercury vapour and Sodium vapour lamps on the following aspects
      (i) Starting
      (ii) Colour of light
      (iii) Installation and running cost
      (iv) Stroboscopic effect
      (v) Applications   10M

UNIT–IV

7. a) Derive an expression for the distance travelled by an electric train using trapezoidal speed-time curve. 8M

   b) Outline the significant features of traction drives. 6M

OR

8. Discuss in detail why series motors are ideal for AC or DC traction. 14M

UNIT–V

9. a) Explain the terms specific energy output and specific energy consumption. 6M

   b) A 500 ton goods train is to be hauled by a locomotive up to a gradient of 1 in 40 with an acceleration of 1.5kmphps. determine the weight of the locomotive, if axle load is not exceeded 24 tones coefficient of adhesion is 0.3 track resistance 45N/ton and effective rotating masses 10 % of dead weight 8M

OR

10. a) Explain briefly the tractive effort required, while the train is moving up the gradient and down the gradient. 6M

    b) A train is required to run between stations 1.6kms apart at an average speed of 40km/hr.The run is to be made from a quadrilateral speed-time curve. The acceleration is 2km/hr/sec. The coasting and braking retardations are 0.16km/hr/sec and 3.2km/hr/sec respectively. Determine the duration of acceleration, coasting and braking and the distance covered in each period. 8M

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