Hall Ticket Number :										

R-14

Code: 4G465

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2018

Computer System Architecture

(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 with neat sketch the functional units of computers. 7M

   b) Explain in brief complements in data representation. 7M

OR

2. Convert the following
   i. $(756)_{10} = (?)_8$
   ii. $(175)_{16} = (?)_{10}$
   iii. $(1362)_8 = (?)_2$
   iv. $(1110101)_2 = (?)_{10}$
   v. $(F3A7C2)_{16} = (?)_8$ 14M

UNIT–II

3. a) How information transfer from one register to another register? Explain. 7M

   b) List the basic computer instructions. Sketch the basic computer instructions. 7M

OR

4. a) Describe in brief instruction cycle. 7M

   b) With neat sketch explain bus system for four registers. 7M

UNIT–III

5. List and explain instruction formats in brief. 14M

OR

6 List and explain addressing modes. 14M

UNIT–IV

7. a) Explain control memory with block diagram. 7M

   b) Draw the block diagram for selection of address for control memory. 7M

OR

8. a) Describe the symbolic microinstructions. 7M

   b) What is the need of decoding of microoperations fields? Explain. 7M

UNIT–V

9. a) Explain arithmetic pipeline with an example. 7M

   b) What is cache coherence? Explain.

OR

10. a) Describe Crossbar switch interconnection structure. 7M

    b) Briefly explain the parallel processing. 7M

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Hall Ticket Number :										

R-14

Code: 4G263

III B.Tech. II Semester Supplementary Examinations Nov/Dec 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) Distinguish minimum mode and maximum mode of operation 8M
   b) Explain the instruction format of 8086µP with an example 6M

OR

2. a) Advantages of procedures used in 8086 µP? Illustrate the syntax of it. 8M
   b) List out the assembler directives used in 8086µP. 6M

UNIT–II

3. a) Describe about memory mapped I/O Interfacing. 7M
   b) Describe the stepper motor interfacing with 8086 µP. 7M

OR

4. a) Describe the A/D converters interfacing with 8086 µP. 7M
   b) Write an assembly language program to interface 8255 in mode-0 with 8086. 7M

UNIT–III

5. a) Explain about 4KB of RAM Memory interfacing with 8086. 7M
   b) Explain about modes of 8257. 7M

OR

6. a) Illustrate the basic structure of SRAM and DRAM cells 7M
   b) Need for DMA? Explain the master and slave modes of DMA. 7M

UNIT–IV

7. a) Describe 8259 PIC architecture. 7M
   b) Describe TTL to RS232C and RS232C to TTL conversion. 7M

OR

8. a) Describe 8251 USART architecture. 7M
   b) Describe Vector interrupt table of 8086 µP. 7M

UNIT–V

9. a) Explain about RAM organization in 8051 µC. 7M
   b) Explain about Timer/Counters of 8051µC. 7M

OR

10. a) Draw the pin diagram 8051µC. 7M
    b) Describe the addressing modes 8051µC. 7M

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Hall Ticket Number :										

R-14

Code: 4G261

III B.Tech. II Semester Supplementary Examinations Nov/Dec 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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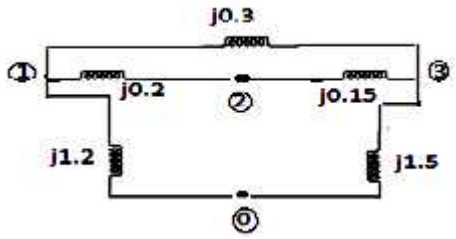
UNIT–I

1. a) Write the mathematical modeling of different power system elements. 7M

   b) Starting from the first principles show that a diagonal element of Y_{BUS} equal to the sum of admittances connected to that bus and an off diagonal element equal to the negative of the admittance directly connected between the buses. 7M

OR

2. For the network shown in fig below, form Z_{BUS} using step by step algorithm.



14M

UNIT–II

3. a) Write an algorithm for Gauss-Seidal load flow method including PV buses. 8M

   b) What are the different types of buses as categorized for load flow studies, explain each one of them in detail. 6M

OR

4. For the power system network, the generators are connected at all four buses, while loads are at buses 2, 3 and 4. The values of real and reactive powers are listed in table 1. All buses other than slack bus are of P-Q type. Line data are given in table 2. Assuming a flat voltage start, determine the voltage magnitudes and the phase angles at the three buses using G- S(Gauss-Seidel) method for first iteration.

Table 1. Bus data

Bus	Pi	Qi	Vt	Type of bus
1	**---**	**---**	1.05∟0	Slack
2	**-0.45**	**-0.15**	**---**	PQ
3	**-0.51**	**-0.25**	**---**	PQ
4	**-0.6**	**-0.3**	**---**	PQ

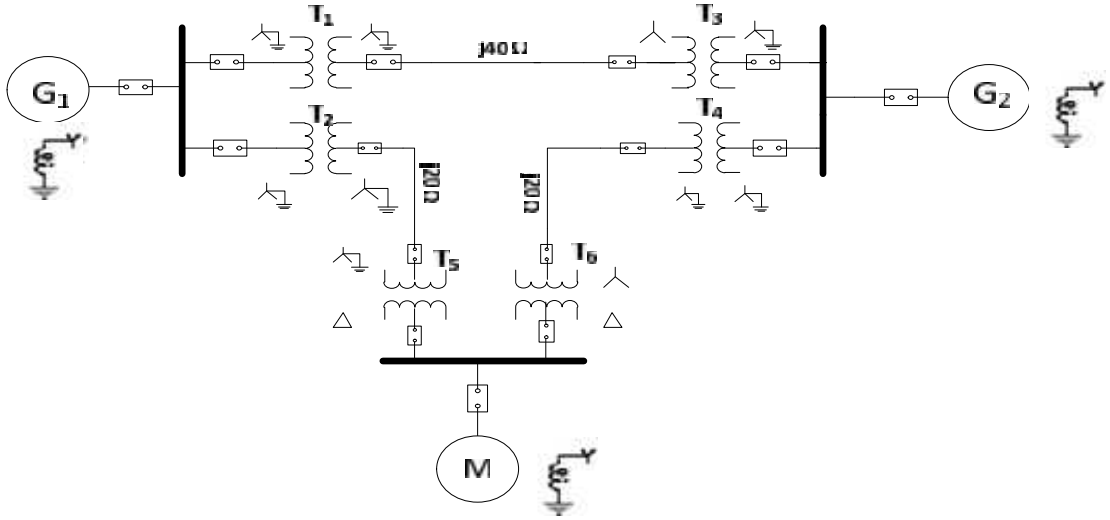
Table 2. Line data

Line No.	Bus Code(p-q)	Line Impedance
1	**1-2**	0.08+j0.2
2	**1-4**	0.05+j0.1
3	**2-3**	0.04+j0.12
4	**3-4**	0.04+j0.14

14M

UNIT–III

5. a) Draw the reactance diagram for the power system shown in below fig. The ratings of generator, motor and transformers are given below. Neglect resistance and use a base of 50MVA, 138KV in the 40Ω line.
Generator G_1 : 20 MVA,18KV,X"=20% ;
Generator G_2 : 20 MVA,18KV,X"=20%;
Synchronous Motor: 30MVA, 13.8KV, X"=20%;
3-phase Y- Y Transformer: 20MVA, 138KV/20KV, X=10%;
3-phase Y- Δ Transformer: 20MVA, 138KV/20KV, X=10%;



8M

b) Three phase voltages across a certain unbalanced 3Φ load are given as E_R = 176-j132; E_Y = -128-j96 and E_B= -160+j100. Find Positive, Negative and Zero sequence components of voltages. 6M

OR

6. a) Explain interconnection of sequence networks for a LL-G fault in power system network with necessary equations. 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

UNIT–IV

7. a) Prove that maximum power transfer can be achieved when X=√3 R. 7M

b) Explain various methods to improve Steady State Stability. 7M

OR

8. a) Derive the expression for the steady state stability limit. 7M

b) Explain the synchronizing power coefficient and analyze the system stability using power angle curve. 7M

UNIT–V

9. a) Explain various methods of improving transient stability. 7M

b) Derive the Swing equation of a Synchronous machine. 7M

OR

10. a) With the help of Equal area criterion for one machine connected to Infinite bus, derive the expressions for critical clearing angle and critical clearing time. 8M

b) A 50HZ generator is delivering 50% of the power that is capable of delivering through a transmission line to an infinite bus. A fault occurs that increases the reactance between generator and infinite bus 500% of the value before fault. When the fault is isolated the maximum power that can be delivered is 75% of the original maximum value. Determine the critical clearing angle for the condition delivered. 6M

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Hall Ticket Number :										

R-14

Code: 4G264

III B.Tech. II Semester Supplementary Examinations Nov/Dec 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 significance of equality and inequality constraints in the economic allocation of generation among different plants in a system 7M

   b) A system consists of three generating plants with fuel costs of:
   $C_1=0.04P_1^2+20P_1+230$ Rs./h
   $C_2=0.06P_2^2+18P_2+200$ Rs./h
   $C_3=0.15P_3^2+15P_3+180$ Rs./h
   Determine the optimum sharing of a total load of 180MW for which each plant would take up for minimum input cost of received power in Rs/MWh. 7M

OR

2. a) What are Loss coefficients? Derive the expressions for Loss coefficients of a two generator system. 7M

   b) Draw the flow chart for obtaining optimal scheduling of generating units by neglecting the transmission losses. 7M

UNIT–II

3. a) Explain problem formation and solution procedure of optimal scheduling for hydro thermal plants. 7M

   b) A load is fed by two plants, one is thermal and other is a hydro plant. The load is located near the thermal plant. The characteristics of the plants are
   $F_T = 0.04P_T^2+25PT+20$ Rs./hr; $W_H=0.0012P_H^2+7.5P_H$ m3/Sec ;
   ¥$_H$=$2.5X10^{-3}$ Rs./m^3. Determine the power generation of both plants and load connected, when λ = 20Rs./ MWh. 7M

OR

4. a) Obtain the modeling of hydro turbine and draw its block diagram. 7M

   b) With the help of a flow chart, explain the dynamic programming method in unit commitment. 7M

UNIT–III

5. a) Explain speed governing mechanism. Develop its block diagram. 7M

   b) Develop the block diagram of Generator and load. 7M

OR

6. a) Why is it necessary to maintain constant frequency and voltage profiles in a power system network? Explain. 7M

   b) Draw and explain the Block diagram of IEEE type-1 excitation system. 7M

UNIT–IV

7. a) Draw the block diagram of single area Load frequency control system. Explain the terms in it. 7M

   b) Two generators of rating 125 and 250MW are operated with droop characteristics of 4% and 5% respectively from no load to full load. Find the load sharing by each generator if a load of 300MW is connected across the parallel combination of those generators. 7M

OR

8. a) Show that steady state frequency deviation in a single area LFC is reduced to zero if the PI controller is reduced. 7M

   b) Discuss the importance of combined load frequency control and economic dispatch control with a neat block diagram. 7M

UNIT–V

9. a) What do mean by compensation of a line? Discuss briefly different methods of compensation. 7M

   b) Explain what you mean by loadability of overhead lines and discuss loadability characteristic of these lines. 7M

OR

10. a) What is sub synchronous resonance condition? How is it handled in electrical network? 7M

    b) A 35 kW induction motor has power factor 0.85 and efficiency 0.9 at full load, power factor 0.6 and efficiency 0.7 at half-load. At no-load, the current is 25% of the full-load current and power factor 0.1. Capacitors are supplied to make the line power factor 0.8 at half-load. With these capacitors in circuit, find the line power factor at (i) full load, and (ii) no-load. 7M

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