Code : 1GA61

R-11 / R-13

III B.Tech. II Semester Regular & Supplementary Examinations May 2016
Managerial Economics and Financial Analysis
(Common to EEE & CSE)

Max. Marks: 70   **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
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1.	Define Managerial Economics. Explain managerial economics relation with other functional areas.	14M
2. a)	Explain law of demand with its exceptions.	7M
b)	How do you measure the elasticity of demand?	7M
3.	A firm has a fixed cost of Rs.50,000, selling price per unit is Rs.25,000 and present level of production is 3,500 units.	
	a) Determine BEP in terms of volume and sales value.	10M
	b) Calculate the margin of safety.	4M
4. a)	What are the features of perfect competition?	7M
b)	How price output is determined in case of perfect competition in short run?	7M
5. a)	Write about need of public enterprises.	7M
b)	What are the problems faced by public enterprises?	7M
6.	Explain about the methods and source of finance.	14M
7	Make a trial balance as on 31.12.2002 from the following information	

Particulars	Rs.
Sundry debtors	32,000
Stock (1.1.2002)	22,000
Cash in hand	35
Cash at bank	1,545
Plant and machinery	17,500
Sundry creditors	10,650
Trade expenses	1,075
Sales	2,34,500
Salaries	2,225
Carriage outwards	400
Rent	900
Bills payable	7,500
Purchases	2,18,870
Discounts (Dr.)	1,100
Capital	79,500
Business premises	34,500

14M

8	Write about	
	a) Liquidity ratios	7M
	b) Profitability ratios	7M

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Code : 1G261

R-11/R-13

III B.Tech. II Semester Regular & Supplementary Examinations May 2016
Power System Analysis
(Electrical & Electronics Engineering)

Max. Marks: 70   **Time: 03 Hours**
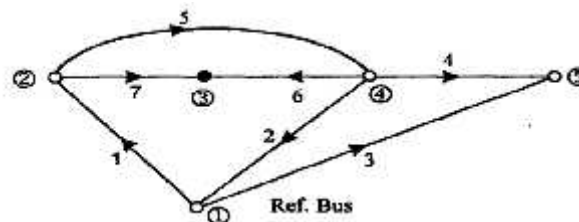
Answer *any five* questions
All Questions carry equal marks (14 Marks each)

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1. a) Define the following terms:
       (i) Graph (ii) Branches (iii) Links (iv) Tree (v) Co-Tree (vi) Basic loop   6M

   b) Derive the matrix Zloop for the oriented graph shown below

                                                                             8M
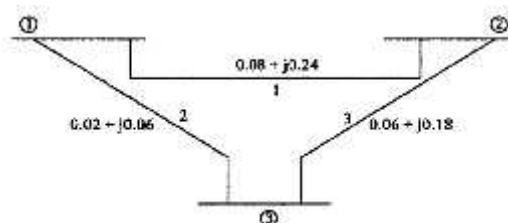
2. a) Describe the Procedure for modification of Z_{BUS} when a line is added or
       removed which has no mutual impedance.   4M

   b) For the system in below Fig. Obtain Z_{BUS} by using building algorithm.

                                                                             10M

3. a) Explain the importance of load flow studies. Give the classification of buses
       for load flow study.   4M

   b) Derive the load flow equations for Gauss-Seidel load flow. Explain Gauss-
   Seidel method of load flow solution with neat algorithm and flow chart.   10M

4. a) Explain clearly with a flow chart the computational procedure for load flow solution
       using Newton- Raphson method when the system contains all types of buses.   8M

   b) Compare GS, NR and FDC methods of solving power flow equations.   6M

5.   Draw the reactance diagram of the following network with all reactance
       marked in pu. Transmission line reactance is 5 /km/ph. Select generator
       rating as base in generator circuit.
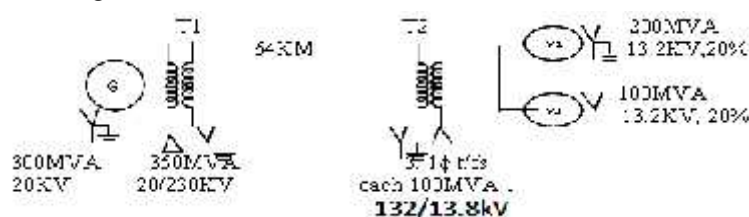
                                                                             14M

6. a) The line-to-ground voltages on the high voltage side of a step-up transformer are 100 kV, 33 kV and 38 kV on phases a, b and c respectively. The voltage of phase a leads that of phase b by 100° and lags that of phase c by 176.5°. Determine the symmetrical components of voltages:

    Va = 100∠0°;   Vb = 33∠−100°;   Vc = 38∠176.5°.   6M

    b) Derive the expression for fault current for a LLG fault at the terminals of an unloaded alternator. Show the interconnection of sequence networks.   8M

7. a) Derive the expression for synchronizing power coefficient from power angle equation.   8M

    b) Write a short note on methods of improving steady state stability of a power system network.   6M

8. a) Derive the expression for Swing equation of a single machine connected to infinite bus system.   8M

    b) 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.   6M

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Code : 1G262

III B.Tech. II Semester Regular & Supplementary Examinations May 2016
Utilization of Electrical Energy
(Electrical & Electronics Engineering)

Max. Marks: 70   **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
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1. a) Explain the different factors that govern the selection of Motors   7M

   b) What is Load Equalization and explain its importance with an example.   7M

2. a) Explain the principle of Dielectric heating and its applications   7M

   b) A 45KW, 3-phase, 400V resistance oven is star connected. Heating element is used is nickel-chromium strip 0.3mm thick. If the wire temperature is to be 1000^0C and that of the charge is to be 700^0C, estimate a suitable width and length of wire required. Take emissivity=0.62 Specific resistance of nickel-chromium is 0.03×10^{-6} ohm-m   7M

3. a) Explain the resistance welding and Spot welding in Detail   8M

   b) What are the advantages of using coated welding Electrodes?   6M

4. Define the following terms with respect to illumination

   i) Mean horizontal candle power **ii**) Reduction Factor

   iii) Brightness or Luminance **iv**) Maintenance factor **v**) Waste light factor   14M

5. a) Explain in brief about Fluorescent lamps with a neat diagram   7M

   b) A room measuring 20m x 15m is to be illuminated by 10 lamps and the average illumination is to be 75 lux. Determine the MSCP of each lamp if the utilization and depreciation factors are 0.5 and 0.8 respectively.   7M

6. a) Describe various factors taken into account while deciding the changeover from existing system of electrification to new system of electrification   7M

   b) Explain electric braking by Plugging for all types of machines   7M

7. a) Define the terms crest speed, average speed and schedule speed. What are different methods of approximation of speed-time curves? Derive expressions for distance travelled using quadrilateral Speed time curve.   7M

   b) An electric train has quadrilateral speed-time curve as follows:

   (**i**) Uniform acceleration from rest at 2 kmphps for 30 seconds

   (**ii**) Coasting for 50 seconds (**iii**) Braking period of 20 seconds

   The train is moving a uniform down gradient of 1%, tractive resistance 40 Newtons per tonne, rotational inertia effect 10% of dead weight, duration of stop 15 seconds and overall efficiency of transmission gear and motor as 75%. Calculate is schedule speed and specific energy consumption of run.   7M

8. a) Define "coefficient of Adhesion" and explain factors on which it depends.   7M

   b) An electric train ha an average speed of 45kmph on a level track between stops 1800m apart. It is accelerated at 2 kmphps and brakes are applied at 3 kmphps. Draw the speed time curve for this run. Estimate the energy consumption at the axle of the train per tonne-km. Take tractive resistance constant at 45 NW per tonne and 9% for rotational inertia.   7M

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Code : 1G366   R-11/R-13

III B.Tech. II Semester Regular & Supplementary Examinations May 2016
Microprocessors and Microcontrollers
(Electrical & Electronics Engineering)

Max. Marks: 70   Time: 03 Hours

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
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1. Bring out the differences between MIN & MAX modes of 8086. Explain how
    the Bus control signals are obtained in Maximum mode.   14M

2. a) Write an Assembly Language program for an 8086 Processor to compute the
        factorial of a given number.   8M

    b) Explain the following Assembler Directives
            (i) OFFSET
            (ii) SEGMENT and
            (iii) ENDS   6M

3. Explain in detail, the
            (i) Modes of operation
            (ii) Bit Set-Reset and
            (iii) Mode Set Control words
    of 8255 Programmable Peripheral Interface.   14M

4. A memory system is to be designed for an 8086 processor based system with
    two chips of 16K X 8 EPROM and two chips of 32K X 8 RAM. Select the
    suitable memory map based on 8086 microprocessor's architecture.   14M

5. a) Describe the handling of interrupts by 8086 processor.   3M

    b) Describe the sequence of operations carried out by an 8086 processor when
        it encounters Divide-by-Zero interrupt and NMI simultaneously.   4M

    c) Draw and explain the architecture of 8253.   7M

6. a) Draw and discuss the internal architecture of 8251 USART.   10M

    b) Discuss the serial data communication standards.   4M

7. a) Contrast interrupts and polling. Explain the interrupt handling mechanism in
        8051 microcontroller.   7M

    b) What are the interrupts in 8051 microcontroller? Explain their priorities, call
        addresses and priority handling.   7M

8. a) Explain with neat block diagram, the architecture of ARM microcontroller. 10M

    b) List out the features of MCS-96 microcontroller.   4M

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III B.Tech. II Semester Regular & Supplementary Examinations May 2016
Computer System Architecture
(Electrical & Electronics Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
****

1. a) Write about the following
    (i) Basic performance Equation.
    (ii) floating-point representation 7M
   b) Explain about Error detection codes in detail. 7M

2. a) What is meant by fetch cycle? Explain the sequence of events involved in this cycle. Also write the sequence of micro-operations required. 7M
   b) Explain computer instructions with examples. 7M

3. a) Describe various addressing modes with examples. 7M
   b) List and explain data transfer instructions with examples. 7M

4. a) Explain the operation of a micro program sequencer with a neat diagram. 8M
   b) Hardwired control unit is faster than micro programmed control unit. Justify the statement and explain it. 6M

5. a) Explain Booths multiplication algorithm with example. 8M
   b) Draw the circuit for BCD addition and subtraction and explain the operation. 6M

6. a) Define cache memory and compare different mapping techniques. 8M
   b) Explain the working of memory hierarchy. 6M

7. a) What is DMA? Explain the operation of DMA with neat diagram. 8M
   b) Describe an asynchronous data transfer using strobe control with the help of timing diagram. 6M

8. a) Explain about RISC pipeline. 8M
   b) Briefly explain the Flynn's classification of the processors. 6M

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III B.Tech. II Semester Regular & Supplementary Examinations May 2016
Power System Operation and Control
(Electrical & Electronics Engineering)

Max. Marks: 70 **Time: 03 Hours**

Answer *any five* questions
All Questions carry equal marks (14 Marks each)
****

1. a) Discuss the various factors which will decide the production cost of a thermal plant. 6M

   b) The fuel cost curve of two generators are given as under

   $C_A (P_A) = 800 + 45 P_A + 0.01 P_A^2$

   $C_B (P_B) = 2000 + 43 P_B + 0.003 P_B^2$

   and if the total load supplied is 700 MW, find the optimal dispatch with and without considering the generator limits where the limits have been expressed as :

   50 MW P_A 200 MW

   50 MW P_B 600 MW.

   Compare the systems increment at cost with & without generator limits considered. 8M

2. a) What is incremental transmission loss and derive the general transmission loss formula? 6M

   b) Two thermal plants are interconnected and following are the incremental production costs of the plants in *Rs/MWhr*.

   $$\frac{dC_1}{dP_1} = 20 + 10P_1$$

   $$\frac{dC_2}{dP_2} = 15 + 10P_2$$

   Where P1 & P2 are plant powers expressed in p.u. in 100 MVA base.
   The transmission loss is given by

   $$P_L = 0.1P_1^2 + 0.2P_2^2 + 0.1P_1P_2 \ p.u$$

   If the incremental cost of received power is 50 Rs/MWhr, find the optimal generation. 8M

3. a) Discuss the demerits of hydrothermal coordination in optimal generation scheduling. 6M

   b) Develop the hydroelectric power plant model with necessary block diagram. 8M

4. a) What is unit commitment? Explain how it can be done when only thermal power generators are available. 7M

   b) Explain the steady state analysis of an isolated power system. 7M

5. a) What is area control error? Discuss its significance. 6M

   b) Determine the area frequency response characteristics and the static frequency error for a system with the following data, when 1% load change occurs.

   B = 0.01 P.u MW/Hz

   R = 2.5 Hz/P.u MW

   Tp = 16 sec

   Kp = 100Hz/p.u MW 8M

6. Derive an expression for steady state change of frequency and the line power transfer of a two area power system. List out the assumptions made. 14M

7. a) Derive the relation between reactive power flow and the voltage of bus. 7M

   b) Explain the effect of shunt compensation on the transmission line performance. 7M

8. a) Explain briefly about the reasons for restructuring / deregulation of power industry 7M

   b) Discuss briefly the significant benefits of power industry deregulation. 7M

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