

Hall Ticket Number :

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R-11 / R-13

Code : 1GA61

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

1. Define managerial economics. Explain its nature and scope 14M
2. Explain briefly about the various methods of forecasting demand. 14M
3. Explain briefly about Iso-quants and Iso-cost curves. 14M
4. a) Explain about cost based pricing methods. 7M
b) Write about market penetration and two parts pricing method. 7M
5. Explain the features, merits and limitations of joint stock company. 14M
6. Explain the Payback period and ARR methods of capital budgeting. 14M
7. From the following extract of trial balance, from the books of Kamal, for the year ending December 31, 2002, prepare a trading account.

Trial Balance as on December 31, 2002

	Rs.	Rs.	
Sales		3,25,00	
Purchases	2,40,000		
Freight	5,000		
Sales returns	5,000		
Purchase returns		5,600	
Wages	40,000		
Salaries	20,000		
Carriage inwards	10,000		
Opening stock (1.1.2002)	25,000		
Adjustments: Stock as on 31.12.2002 was Rs. 40,000			14M

8. What is meant by Ratio Analysis? Explain briefly about various methods of Ratio Analysis. 14M

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R-11/R-13

Code : 1G261

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Power System Analysis

(Electrical & Electronics Engineering)

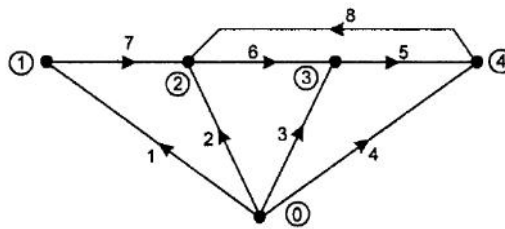
Max. Marks: 70

Time: 03 Hours

Answer any five questions

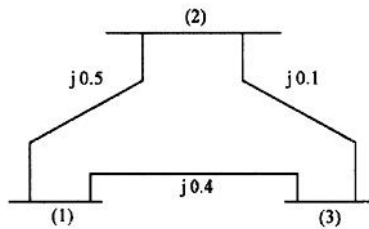
All Questions carry equal marks (14 Marks each)

1. a) Show the basic loops and basic cutsets for the graph shown below and verify any relations that exist between them.



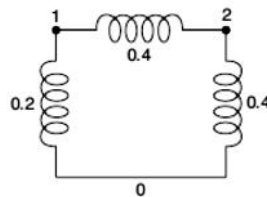
6M

- b) For the system shown in figure obtain Y_{BUS} by inspection method. Take bus (1) as reference. The impedances marked are in p.u.



8M

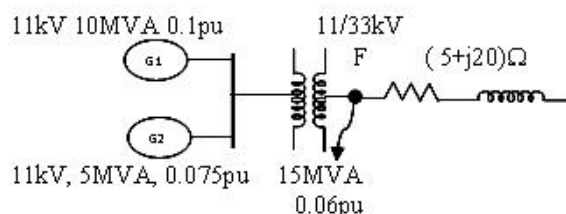
2. a) Derive an expression for adding a link to a network with mutual inductance in Z_{BUS} building algorithm. 8M
- b) A network consists of three elements 0-1, 1-2 and 2-0 of p.u. impedances 0.2, 0.4 and 0.4 respectively. Determine the bus impedance matrix.



6M

3. a) Derive the expressions for bus powers and line flows in a power system network. 6M
- b) Write the load flow equations for Gauss-Seidel Iterative method including PV buses. 8M
4. a) Derive the expressions for Jacobian matrix used in NR load flow analysis. Write the algorithm for NR load flow analysis. 8M
- b) Write the load flow equations for Fast Decoupled load flow. Explain the validity of the model. 6M

- 5 a) Define per unit system and explain its advantages and disadvantages 4M
- b) A 3-phase transmission line operating at 33kV and having a resistance and reactance of 5Ω and 20Ω is connected to a generating station bus bar through a 15MVA step up transformer which has a reactance of 0.06pu. Connected to the bus bar are two generators one 10MVA 0.1pu reactance and other 5MVA having 0.075pu reactance. Calculate the fault current and short circuit MVA when a 3 Φ short circuit occurs at HV terminals of transformer.



10M

6. a) Derive the expression for three phase power in terms of symmetrical components. 6M
- 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. 8M
7. a) Derive the expression for power angle curve of a single machine connected to infinite bus. 6M
- b) Define the terms: Stability, Steady state stability limit, transfer reactance, Synchronizing power coefficient. 8M
8. a) With the help of necessary expressions, explain the procedure of solving swing equation by step by step algorithm. List out the assumptions made. 8M
- b) Write short notes on methods of improving transient state stability of a power system network. 6M

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R-11/R-13

Code: 1G468

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Computer System Architecture

(Electrical & Electronics Engineering)

Max. Marks: 70

Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (14 Marks each)

1. a) Convert the following to indicated bases
i) $(755)_8$ to $()_2$ 2M
ii) $(1001.110)_2$ to $()_{10}$ 2M
iii) $(856)_{10}$ to $()_8$ 2M
iv) $(976)_{10}$ to $()_2$ 1M
b) Obtain 9's complement of 12869876 2M
c) Obtain 10's complement of 163900 , 60657 4M
d) Obtain 1's complement of 1001001 1M
2. a) Draw the 4 bit arithmetic circuit and explain 7M
b) Draw the Basic computer registers and memory and explain each 7M
3. a) Explain data manipulation instructions in detail 7M
b) What are the differences between RISC and CISC? 7M
4. a) What is the difference between microprocessor and micro program? 2M
b) Explain the difference between hardwired control and micro programmed control 4M
c) Discuss the design of micro control 8M
5. a) explain Booth Multiplication with example 7M
b) Draw the block diagram of BCD adder and explain it 7M
6. a) Explain Hardware implementation of associative memory 7M
b) Write an example for Associative mapping cache memory organization 7M
7. a) Discuss about Daisy-chain priority interrupt controller 7M
b) Explain Destination initiated data transfer using Handshaking method 7M
8. a) Explain in detail arithmetic pipeline 7M
b) Discuss Multistage switching network and omega network 7M

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R-11/R-13

Code : 1G366

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

1. a) Why the memory in 8086 processor is segmented? Explain Overlapping and Non-Overlapping segments. 8M
b) What is a Queue? Explain the function of Queue in 8086 processor. When the Queue of 8086 fails to speed-up the execution? 6M
2. a) With suitable examples, bring out the similarities and differences between Procedure and Macro. 8M
b) It is required to perform sum of two 16-bit numbers. Implement it with four different addressing modes. 6M
- 3 Draw the ADC interface to 8086 using 8255 PPI. With a neat program, explain how analog to digital conversion is carried out by 8086 microprocessor. 14M
4. a) Discuss the following methods of data transfers
(i) Polling
(ii) Interrupt driven 6M
b) "The DMA controlled data transfers are faster than the polling and Interrupt driven data transfers". Justify. 8M
5. With a neat sketch explain the functioning of 8259. What is the significance of CAS0 to CAS2 and SP/EN# pins of 8259. How many maximum number interrupts can be channeled to 8086 by cascading the 8259s? 14M
6. a) Describe the methods of serial data communication with at least one example. 6M
b) Describe the modes of serial data transfer. 4M
c) What is the need for RS 232? 4M
7. a) List out the salient features of 8051 microcontroller and how it is different from a microprocessor. 6M
b) Differentiate the following instructions of 8051 microcontroller
(i) AJMP and ACALL
(ii) LJMP and SJMP
(iii) RET and RETI
(iv) RR and RRC 8M
- 8 a) Discuss the memory organization of MCS-96 microcontroller. 7M
b) Compare 8051 and ARM microcontrollers. 7M

Code : 1G263

III B.Tech. II Semester Supplementary Examinations Nov/Dec 2016

Power System Operation and Control*(Electrical and Electronics Engineering)***Max. Marks: 70****Time: 03 Hours**Answer any **five** questions

All Questions carry equal marks (14 Marks each)

1. a) Explain the following i) Heat rate Curve ii) Input –Output Curve 6M
- b) Three power plants of total capacity 425MW are scheduled for operation to supply total load of 300MW. Find the optimum load scheduling if the plants have the following incremental cost characteristics and the generator constraints
- $$\frac{dc_1}{dP_{G_1}} = 30 + 0.15P_{G_1} \quad 25 \leq P_{G_1} \leq 125 \quad \frac{dc_3}{dP_{G_3}} = 15 + 0.18P_{G_3} \quad 50 \leq P_{G_3} \leq 200$$
- $$\frac{dc_2}{dP_{G_2}} = 40 + 0.20P_{G_2} \quad 30 \leq P_{G_2} \leq 100$$
2. a) Derive the expression for loss coefficients and state the assumptions made in deriving the same 7M
- b) Two power plants are connected together by a transmission line and load is at power plant 2. When 100MW are transmitted from plant 1, the transmission loss is 10MW in the transfer of power from plant 1 to plant 2. The incremental fuel cost characteristics of plants 1 and 2 are given by
- $$\frac{dc_1}{dP_{G_1}} = 13 + 0.1P_{G_1} \quad \text{Rs/MWh} \quad \frac{dc_2}{dP_{G_2}} = 12 + 0.12P_{G_2} \quad \text{Rs/MWh}$$
3. a) Explain in detail about short-term hydro thermal scheduling problem 8M
- b) What is the objective of Unit Commitment problem? What are the various items that must be considered while making a unit commitment problem? 6M
4. a) Explain the mathematical modeling of speed governing system 7M
- b) Explain IEEE type-1 excitation system with a block diagram 7M
5. a) Explain the necessity of keeping frequency constant in a power system network. 4M
- b) For a single area load frequency control derive the expression for steady state frequency and prove that $f_{static}=0$ when the incremental control input is equal to incremental disturbance input. 10M
6. a) What is the importance of tie-line bias control? When can we say that the tie line is weak or strong? 7M
- b) Explain the steady state response uncontrolled case of a two area load frequency control system 7M
7. a) What is reactive power and explain the reactive power balance and its effect on system voltage 7M
- b) Explain briefly the specifications and objectives of load compensation 7M
8. a) What is the role of modern technology in deregulated power market 7M
- b) Explain how deregulation can be implemented in our country? 7M

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Code : 1G262

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

- 1 a) What are the relative advantages and disadvantages of D.C and A.C electric drives? 5M
b) A 200V, 20 H.P dc shunt motor has field and armature resistance of 100 and 0.25 respectively. Calculate the resistance to be inserted in the armature circuit to reduce the speed to 80%, assuming the motor efficiency at full load to be 90%. (i) When torque remains constant (ii) When torque is proportional to square of speed. 9M
2. a) Describe the construction and principle of working of Ajax Wyatt furnace. 7M
b) The power required for the dielectric heating of a slab of resin 150sq-cm in area and 2cm thickness is 200W at a frequency of 30MHz. The material has relative permittivity of 5 and a p.f 0.05. Determine the voltage necessary and current flowing through the material. If the voltage is limited to 600V, What will be the value of frequency to obtain same heating? 7M
3. a) What are the various methods of welding 8M
b) What are the advantages of using coated welding Electrodes? 6M
4. a) What is the difference between Plane angle and solid Angle? 5M
b) Explain the importance of Polar curve 4M
c) Define Absorption factor and Reflection factor 5M
5. a) Compare merits and demerits of filament lamps and fluorescent lamps 8M
b) A corridor is lighted by lamps spaced 9.15cm and suspended at a height of 4.575m above centre line of the floor. If each lamp gives 100 candle power in all directions below the horizontal, find maximum and the minimum illumination on the floor along the centre line. 6M
6. a) Discuss the merits and demerits of the D.C and 1 – Ø A.C systems for the main and suburban line electrification of the railways. 7M
b) Explain various methods braking. Give advantages and disadvantages. 7M
7. a) Derive an expression for distance travelled by an electric train using a trapezoidal speed-time curve 7M
b) The average speed of a train is 60kmph. Determine its maximum speed assuming trapezoidal speed time curve, if the distance between stops is 2.5 km, acceleration is 1.8 kmphps and retardation is 3 kmphps. 7M
8. a) Derive the expression for energy returned during regenerative braking. 7M
b) An electric train ha an average speed of 42kmph on a level track between stops 1400m apart. It is accelerated at 1.7 kmphps and brakes are applied at 3.3 kmphps. Draw the speed time curve for this run. Estimate the energy consumption Assume tractive resistance constant at 50 NW per tonne and 10% rotational inertia. 7M
