

Code : 1G263

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)**III B.Tech. II Semester Regular Examinations, June 2014****Power System Operation and Control**
(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE of the following
All questions carry equal marks (14 Marks each)

* * * * *

1. a) Discuss about the incremental fuel cost and production cost. 7M
- b) Explain the various factors to be considered in allocating generation to different power stations for optimum operation. 7M
2. a) Derive the transmission loss formula and states the assumptions of the system. 7M
- b) A system consisting of two generating plants. The incremental costs in Rs/ MWh with P_{G1}^2 and P_{G2}^2 in MW are $\frac{dC_1}{dP_{G1}} = 0.006P_{G1} + 7.2$ and $\frac{dC_2}{dP_{G2}} = 0.01P_{G2} + 5$
The system is operating on economic dispatch with $P_{G1} = P_{G2} = 330$ MW and $\frac{\partial P_L}{\partial P_{G2}} = 0.3$. Find the penalty factor of plant 1. 7M
3. a) What do you mean by unit commitment problem and discuss various constraints related to UCP. 7M
- b) A two-plant system having a steam plant near the load centre and a hydro plant at a remote location. The load is 520 MW for 15 hrs a day and 330 MW, for 9 hrs a day.
The characteristics of the units are
 $C_1 = 120 + 45 P_{GT} + 0.075 P_{GT}^2$ Rs./hr
 $w_2 = 0.6 P_{GH} + 0.00283 P_{GH}^2$ m³/sec
Loss co-efficient, $B_{22} = 0.001$ MW⁻¹
Find the generation schedule, daily water used by hydro plant and daily operating cost of thermal plant for $\gamma_j = 80$ Rs./ m³-hr 7M
4. a) Draw the block diagram representation of steam turbine and obtain the approximate linear model 7M
- b) Draw the block diagram of IEEE type-I excitation model and explain. 7M
5. a) What are the basic requirements needed for control strategy in LFC system. 7M
- b) Two generating stations A and B have full load capacities of 200 MW and 70 MW respectively. The interconnector connecting the two stations has an induction motor/ synchronous generator (plant C) of full load capacity 20 MW. Percentage changes of speeds of A, B and C are 5, 4 and 3 respectively. The loads on bus bars A and B are 60 MW and 35 MW respectively. Determine the load taken by the set C and indicate the direction in which the energy is flowing. 7M

6. Give a typical block diagram for a two-area system inter connected by a tie line and explain each block. Also deduce relations to determine the frequency of oscillations of tie line power and static frequency drop. List out assumptions made. 14M
7. a) Explain about shunt compensation 5M
- b) The load at the receiving end of a three-phase, overhead line is 30 MW, power factor 0.82 lagging, at a line voltage of 33 kv. A synchronous compensator is situated at the receiving end and the voltage at both ends of the line is maintained at 33 kV. Calculate the MVAR of the compensator. The line has resistance 5Ω per phase and inductive reactance (line to neutral) 20 ohm per phase. 9M
8. a). Write the reasons for deregulation. 7M
- b). Write the key issues of the deregulation of the power systems. 7M

Code : 1G262

R11

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

III B.Tech. II Semester Regular Examinations, June 2014

Utilization of Electrical Energy
(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE of the following
All questions carry equal marks (14 Marks each)

* * * * *

1. Discuss various methods of controlling the speed of a 3-phase induction motor. Draw speed – torque characteristics in each case.
2. a) Explain with neat sketches, the construction and principle of operation of Ajax Wyatt furnace
b) Determine the efficiency of a high frequency induction furnace which takes 10 minutes to melt 1.815Kg of aluminium, the input to the furnace being 5 KW and the initial temperature is 15⁰C. Specific heat of aluminium is 0.212, melting point is 660⁰C and latent heat of fusion of aluminium is 76.8 K Cal/Kg.
3. a) Explain the procedure for submerged Arc welding
b) Write the comparison between A.C. and D.C. welding.
4. What are polar curves? Explain Rouseau diagram and its importance in illuminating engineering.
5. a) Explain the design procedure for good lighting system
b) Two lamps one of 200 c.p. and another of 500 c.p. are hung at height of 10 metres and 25 metres respectively. The horizontal distance between the poles is 80 metres. Determine the illumination at the midpoint between the poles on the ground.
6. Explain clearly regenerative braking when used for d.c. series traction motors. How does it differ from the regenerative braking as used for d.c. shunt motors?
7. The distance between two stations is 1 km. and the schedule speed is 30 Km/h. Station stopping time 20 sec. Assume braking retardation 3 Km. p.h.p.s. and maximum speed 1.25 times the average speed. Determine the acceleration required to run the service if the speed-time curve is approximated by a trapezoidal curve.
8. a) Define the term specific energy consumption and discuss the factors which affect the specific energy consumption of trains operating at a given scheduled speed.
b) Write a short note on adhesive weight.

Code : 1G468

R11

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)

III B.Tech. II Semester Regular Examinations, June 2014

Computer System Architecture
(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 70

*Answer any FIVE of the following
All questions carry equal marks (14 Marks each)*

* * * * *

- | | | |
|-------|--|----|
| 1. a) | Explain any four arithmetic operations. | 7M |
| b) | Discuss in detail about error detection codes. | 7M |
| 2. a) | Explain any four memory reference instructions along with their purpose. | 7M |
| b) | What is register transfer language and explain about register transfer bus and memory transfers in detail. | 7M |
| 3. a) | Define addressing mode and discuss about different addressing modes. | 7M |
| b) | Give a detailed note on RISC. | 7M |
| 4. a) | Explain Booth's algorithm with its theoretical basis. | 7M |
| b) | Multiply 10111 with 10011 using, Booths algorithm. | 7M |
| 5. a) | Explain the need for memory hierarchy. | 7M |
| b) | Explain in detail the about any two types of mapping techniques used in the usage of cache memory. | 7M |
| 6. a) | With an example explain about I/O interface unit. | 7M |
| b) | Discuss in detail about asynchronous serial data transfer. | 7M |
| 7. a) | Explain in detail about parallel processing. | 7M |
| b) | With a flow chart explain about four segment CPU pipeline. | 7M |
| 8. a) | Explain with neat sketch different kinds of Multi stage switching networks. | 7M |
| b) | Explain in detail about parallel arbitration. | 7M |

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)**

III B.Tech. II Semester Regular Examinations, June 2014

Managerial Economics and Financial Analysis

(Common to EEE & CSE)

Time: 3 hours

Max Marks: 70

*Answer any FIVE of the following
All questions carry equal marks (14 Marks each)*

* * * * *

1. What is Managerial Economics? Explain how Managerial Economics is linked with other academic disciplines?
2. What do you understand by Elasticity of Demand? Explain how do you measure elasticity of demand?
3. Define Break Even Analysis? How do you determine it. What are the limitations of BEA?
4. What is Monopoly and explain about price output determination of Monopoly?
5. Define a company? What are the chief characteristics of a company?
6. The following data relates to two projects namely A and B.

Cash outlays	Project A 1,50,000	Project B 1,50,000
Cash inflow		
1	50,000	40,000
2	50,000	40,000
3	50,000	40,000
4	20,000	70,000
5	20,000	30,000
6	20,000	90,000

Calculate Payback Period and also suggest which project do you prefer?

- 7 From the following transactions prepare journal of Ysaswini?
 On 1st January, 2014 Ysaswini Commenced business with cash Rs.100000
 On Jan. 2nd deposited Rs.5000 in the bank
 On Jan. 4th purchased machinery for cash Rs. 10000
 On Jan. 10th she purchased goods for Rs 20000
 On Jan. 15th she sold goods worth Rs.40000
 On Jan. 20th she purchased stationary Rs.1000
 On Jan. 25th she purchased Furniture from Harika and Co. Rs.10000
 On Jan. 31st she paid salaries of Rs.5000

- 8 From the following Profit & Loss A/C of Siva Sai Company Ltd., for the year ended 31-12-2013. Calculate **i. Gross Profit Ratio ii. Net Profit Ratio iii. Operating Ratio IV. Operating Profit Ratio.**

To Opening Stock	10,000	By Sales	65,000
To Purchases	40,000	By Closing Stock	10,000
To Wages	8,000		
To Carriage	2,000		
To Gross Profit	<u>15,000</u>		
	<u>75,000</u>		<u>75,000</u>
To Administrative	2,000	By Gross Profit b/d	15,000
To Selling & Distribution	2,500		
To Non-Operating Exp	500		
To Net Profit	<u>10,000</u>		
	<u>15,000</u>		<u>15,000</u>

Code : 1G366

ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)**III B.Tech. II Semester Regular Examinations, June 2014****Microprocessors and Microcontrollers**

(Electrical & Electronics Engineering)

Time: 3 hours**Max Marks: 70***Answer any FIVE of the following
All questions carry equal marks (14 Marks each)*

* * * * *

- | | | |
|-------|--|----|
| 1. a) | Explain the pipeline architecture of 8086 microprocessor. | 6M |
| b) | What is instruction queue? Explain its advantage. | 6M |
| c) | List the features of 8086 microprocessor. | 2M |
| 2. a) | Write an assembly language program in 8086 to sort the given numbers in ascending order using bubble sort. | 7M |
| b) | Explain how look-up tables can be used in assembly language programming with one example. | 7M |
| 3. a) | Interface stepper motor to the 8086 microprocessor system and write an assembly language program in 8086 to rotate it by 180° . | 9M |
| b) | Compare memory mapped I/O and I/O mapped I/O. | 5M |
| 4. a) | What is the need of DMA in microprocessor applications? Explain in brief about data transfer modes of DMA. | 6M |
| b) | Draw the interfacing diagram for 8086 based system (minimum mode) with the following specifications:
(i) 16KB RAM
(ii) 8KB EPROM
Draw the memory map for the above interface. | 8M |
| 5. a) | Draw and explain the interfacing of 8259 with 8086. | 8M |
| b) | Explain interrupt structure of 8086. | 6M |
| 6. a) | Explain the features of USB. | 6M |
| b) | Explain the block diagram of USART 8251A. | 8M |
| 7. a) | Explain serial communication modes supported by 8051. | 8M |
| b) | Write an assembly language program in 8051 to generate Fibonacci series of given terms. N | 6M |
| 8. a) | Explain in detail about ARM core architecture. | 9M |
| b) | List the features of ARM microcontrollers. | 5M |

**ANNAMACHARYA INSTITUTE OF TECHNOLOGY & SCIENCES :: RAJAMPET
(AUTONOMOUS)**

III B.Tech. II Semester Regular Examinations, June 2014

Power System Analysis

(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE of the following

All questions carry equal marks (14 Marks each)

* * * * *

1. Explain the procedural steps to calculate bus admittance matrix by direct method? 14M
2. a) Explain merits and demerits of Z_{BUS} building algorithm? 4M
b) Write step by step algorithm for Z_{BUS} building for a network containing no mutual coupling and no phase shifting transformer? 10M
3. Determine the Bus voltages at the end of first iteration by G-S procedure for the data given below

Table:01 line Data

Line	R(pu)	X(pu)
1-2	0.05	0.15
1-3	0.10	0.30
2-3	0.15	0.45
2-4	0.10	0.30
3-4	0.05	0.15

Table:02 Load Data

Bus Code	V(pu)	P(pu)	Q(pu)	Type
1	1.04∠0	--	--	Slack
2	1+j0	0.5	0.2	PQ
3	1+j0	1	0.5	PQ
4	1+j0	0.3	0.1	PQ

4. Explain N-R method of load flow solution using flow chart for polar coordinates? 14M
5. a) Explain about fault limiting reactors? 8M
b) For the network shown in Figure(1) draw p.u impedance diagram

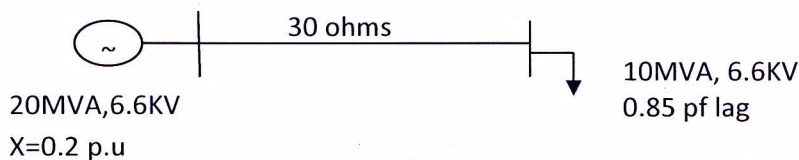


Figure (1)

6. Discuss the symmetrical component method to analyze an unbalanced 3- Φ system? 14M
7. a) What do you understand by steady state stability? 4M
b) Discuss in detail about the Synchronizing power coefficient 10M
8. What are the assumptions in classical studies of transient stability? Why the Swing equation is important in the study of transient stability? 14M
