Hall Ticket Number :										

R-11/R-13

Code : 1G366

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

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. Define microprocessor and explain the internal architecture of 8086 microprocessor.

2. a) Write an assembly language program to reverse the given string of 5 bytes.
   b) Write an assembly language program to perform addition of two words.

3. a) Draw and explain the Programmable peripheral interface(8255) architecture in detail
   b) What is the role of command word register in 8255 and draw the CWR format.

4. Design an interfacing diagram of DMA controller 8257 with 8086 and explain its operation.

5. a) Discuss about different ICWs and OCWs formats of 8259.
   b) Explain different modes of operation of 8259.

6. a) Discuss about synchronous and asynchronous data transfer schemes.
   b) Sketch the functional block diagram of USART 8251 and explain.

7. a) What are the different serial communication modes of 8051.explain with relevant special function registers.
   b) List out and explain the instructions used to access the external RAM.

8. a) Explain in detail bout ARM core architecture.
   b) List the features of ARM microcontroller.

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Hall Ticket Number :										

R-11 / R-13

Code: 1G263

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 any **five** questions

All Questions carry equal marks (**14 Marks** each)

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1. a) What is an incremental fuel cost? Explain its significance in thermal plant operation? 6M

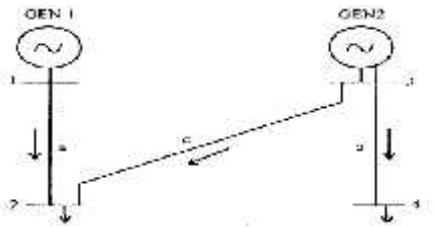
   b) The fuel cost functions in Rs./hr. for two thermal plants are given by:

$$C_1 = 400 + 8.4P_1 + 0.006P_1^2 \; ; 100 \le P_1 \le 600$$

$$C_1 = 600 + 8.93P_2 + 0.006P_2^2 \; ; 60 \le P_2 \le 300$$

   Where P_1, P_2, are in MW. Neglecting line losses and including generator limits, Determine the optimal generation scheduling where P_D = 820MW. 8M

2. Given the network in the figure shown along with the currents flowing in the lines and the impedances of the lines in per unit on a 100MVA base. Compute the B. coefficients for the network when the voltage at bus 1 is 1.0 p.u.



Current in line a = 1.5 – j0.3 p.u.
Current in line b = 2 – j0.3 p.u.
Current in line c = 1 – j0.2 p.u.
Load current at bus2 = 2.5 – j0.5 p.u.

Impedance of lines
a = 0.01 + j0.06 p.u.
b 0.01 + j0.05 p.u.
c = 0.01 + j0.04 p.u.

14M

3. a) Explain the short term Hydro-thermal scheduling problem with necessary expressions. 6M

   b) A two plant system having a thermal and hydro station interconnected. The characteristic of each station is

$$F = (20 + 0.03P_1)P_1 \; Rs/h$$

$$W = (8 + 0.002P_2)P_2 \; m^3/Sec; \quad and \; ¥ = Rs \; 5X10^{-4}/m^3$$

   The transmission loss coefficient is B_{22}=0.0005, Determine the generation of each station when the system λ is 50 Rs/h. 8M

4. a) Derive the transfer function model for typical generator load model. 6M

   b) Two turbo-alternators rated for 110 MW and 210 MW have a governor droop characteristics of 5% from no load to full load. They are connected in parallel to share the load of 250 MW. Determine the load shared by each machine assuming free governor action. 8M

5. a) Obtain the steady state error in load frequency control with an integral controller in an isolated power system. 6M

   b) A 80 MVA synchronous generator operates on full load at a frequency of 50 Hz. A load 40 MW is suddenly removed from the machine. Due to time lag in the governor system, the steam valve begins to operate after 0.3 sec. Determine the change in frequency that occurs in this time. H=4 KW-s/KVA of generator capacity. 8M

6. a) Discuss the importance of maintaining the load frequency control in an inter connected power system 6M

   b) Two areas of a power system network are interconnected by a tie-line, whose capacity is 500 MW, operating at a power angle of 35^0. If each area has a capacity of 5000 MW and the equal speed regulation of 3 Hz/pu MW, determine the tie line power deviation for step change in load of 85 MW occurs in one of the areas. Assume that both areas have the same inertia constants of H = 4 sec. 8M

7. a) With relevant equations, prove that the shunt compensation will improve the power transfer capabilities and stability margin. 6M

   b) A 3 Phase overhead line has resistance and reactance per phase of 25 Ω and 90 Ω respectively. The supply voltage is 145 kV while the load end voltage is maintained at 132 kV for all loads by an automatically controlled synchronous phase modifier. If the kVAR rating of the modifier has the same value for zero loads as for a load of 50 MW, find the rating of the Synchronous Phase modifier. 8M

8. a) Explain the need for deregulation in Power systems. 6M

   b) Explain the deregulation process in power systems and detail about the various operational entities in a deregulated power system. 8M

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Hall Ticket Number :										

R-11 / R-13

Code: 1G262

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

Utilization of Electrical Energy

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any **five** questions

All Questions carry equal marks (**14 Marks each**)

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1.	a)	Describe various methods of starting of 3-phase induction motor.	7M
	b)	Explain the methods of speed control of a DC shunt motor.	7M
2.	a)	What are the advantages of electric heating over the other heating methods? Explain the classification of electric heating methods.	7M
	b)	Describe Ajax Wyatt type induction furnace and explain its working.	7M
3.	a)	Describe with relevant diagrams different types of resistance welding.	7M
	b)	Explain various Arc welding mechanisms available.	7M
4.	a)	Define the terms: Candle power, Luminous intensity, Luminous efficiency, Flux , Solid angle, Absorption factor and beam factor	7M
	b)	Explain basic principles of light control and classification of lighting schemes	7M
5.	a)	State and explain laws of illumination	7M
	b)	What is polar curve? How is it useful in illumination engineering?	7M
6.	a)	Write the chief requirements of electric motors used for traction work.	7M
	b)	Explain the methods of braking of electric motors.	7M
7.	a)	Define the following terms related to traction system: Acceleration, Free run, Coasting, Retardation, Crest speed, average speed and Scheduled speed	7M
	b)	An electric train has an average speed of 42 km/h on a level track between stops 1400 km apart. It is accelerated at 1.7 km/h/s and is braked at 3.3 km/h/s. Find crest speed, acceleration time, free run time and retardation time.	7M
8.	a)	Derive the expression for tractive effort developed by a train.	7M
	b)	An electric train weighing 200 tonnes runs a uniform upgradient of 1% with the following speed-time curve: (i) Uniform acceleration of 2km/h/s for 30 seconds (ii) Constant speed of 40 seconds (iii) Coasting for 30 seconds (iv) Braking at 2.5 km/h/s to rest (v) Stop at station 15 seconds If the tractive resistance is 40n/tonne, rotational inertia effect 10% of dead weight and overall efficiency of transmission and motor is 75%. Determine scheduled speed, specific energy consumption, total energy consumed and distance between stations.	7M

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