Roll No ....

EX-6005(1) (CBGS)
B.E. VI Semester
Examination, May 2018
Choice Based Grading System (CBGS)
Utilization of Electrical Energy
Time : Three Hours
Maximum Marks : 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) State and explain laws of illumination.   7
    b) Two lamps of 200 cp and 400 cp each one mounted 8m apart on lamp posts of 4m height. Calculate illumination 3m away from each post between the two lamps, on the line joining the base of the two lamps.   7

2. a) Explain with diagram working principle of a fluorescent lamp. Also explain the role of a choke in a flourescent lamp. rgpvonline.com   7
    b) Estimate the number and wattage lamps which would be required to illuminate a workshop space 60m×15m by means of lamps mounted 5 meters above the working plane. The average illumination required is 100/lux. Coefficient of utilization = 0.42; maintenance factor 0.8, luminous efficiency $= 16\dfrac{lm}{w}$; space height ratio = unity.   7

3. a) List the advantages of electric heating. Explain loseless type or high frequency induction furnace.   7
    b) Give the induction heating operating principle and the application and limitation of the above.   7

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4. a) Explain the basic principle of electrolysis? What is electroplating and what for it is done?   7
    b) Explain in brief Arc welding and resistance welding.   7

5. a) Give different system of electric traction and their advantages and disadvantages.   7
    b) A train runs with average speed of 60 kmph. Distance between station is 3 kms, values of acceleration and retardation are 1.5 kmphps and 3.5 kmphps respectively. Find the maximum speed of train assuming trapezoida' speed time curve.   7

6. a) Give the advantages of 25 kV a.c system over d.c system of single phase traction system.   7
    b) Two 600 volt motors are started by series parallel control. Each motor takes 400 amps during starting time of 20 seconds and has 0.1 ohms resistance. Calculate
        i)   Energy lost in starting rheostat
        ii) Energy lost in motor
        iii) Motor output
        iv) Total energy input from line   7

7. a) What are the advantages of electric drive over all other drives? Explain in brief the selection of motor drive for particular application.   7
    b) Differentiate between group drive and individual drive.   7

8. Write a short note on any two of the following: 7 each
    a) Load equalization
    b) Electrical braking of Traction motors
    c) Speed control of d.c motor
    d) Hybrid vehicles

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i) Calculate the speed factor in using this pipeline to execute the program as compared with the use of an equivalent non-pipelined processor with an equal amount of flow through delay.

ii) What are the efficiency and throughput of this pipelined processor?

4. a) Consider the following reservation table for a four stage pipeline with a clock cycle T = 20ns

	1	2	3	4	5	6
S_1	X					X
S_2		X		X		
S_3			X			
S_4				X	X	

What are the forbidden latencies and initial collision vector? Draw state transition diagram. Determine greedy cycle and simple cycle. Determine MAL.

b) Explain Cache coherence problem and its solutions briefly.

5. a) Explain shared variable and message passing model briefly.
   b) Explain Multifunctional arithmetic pipelines.

6. a) Explain possible data hazards with its resolving techniques.
   b) Discuss the differences between tomasulo's approaches and using scoreboard techniques of dynamic scheduling.

7. a) Explain message routing schemes in multicomputer Network.
   b) Why is need of Vector processing? Explain characteristics of Vector Processing.

8. a) What are the main parameters for performance checking of Parallel programming model?
   b) Explain different message passing Model.

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