EEE 4/4 II nd Sem & I st Sem

Code No. : 5113/M

FACULTY OF ENGINEERING
B.E. 4/4 (E & EE) II Sem. (Main) Examination, May/June 2012
UTILIZATION

Time: 3 Hours] [Max. Marks:75

***Note**: Answer **all** questions from Part **A**. Answer **any five** questions from Part **B**.*

PART – A **(25 marks)**

1. Why electric heating preferred over other form of heating ? **2**
2. What is pinch effect and how it overcome in Ajar Wyatt furnace ? **3**
3. What do you understand by push buttons ? **2**
4. Write short notes on over load relays. **3**
5. Define MHCP and MSCP. **3**
6. What is Angstrom Unit (AU) ? **2**
7. Explain the term dead weight and effective weight in a locomotive. **3**
8. Define scheduled speed of a train. **2**
9. Differentiate a.c. series and D.C. series motor for traction work. **3**
10. What are the active materials used in lead acid batteries ? **2**

PART – B **(50 marks)**

11. A 30 kW, 3-phase 400V resistance oven is to employ Nickel-Chrome strip 0.025 cm thick for a 3-phase star-connected heating elements. If the wire temperature is to be 1100°C and that of charge is to be 700°C, estimate a suitable width of strip. Assume rediating effeciency of 0.6 and emmissivity as 0.9. The specific resistance of the nichrome – alloy is 1.03×10^{-6} Ω–m.State any assumption made. **10**

12. Explain the following with neat schematic diagram :
    a) Two supply sources for 3-phase induction motor.
    b) Jogging operation of 3-phase induction motor. **(5+5)**

13. Explain the following lamps with neat schematic diagrams :
    a) Mercury vapour lamp
    b) Flourescent lamp. 10

14. Explain constructional details and maintenance of lead acid batteries in detail.

15. A train with a locomotive having 4 motors has a total mass of 250 tonnes. Starting from rest the train attains a speed of 40 kmph in 20 sec. on a 1% upgradient. The gear ratio is 3, the gear efficiency 95%., the wheel diameter 95 cm, train resistance (average) is 40 N per tonne and rotational inertia is 10%. Find the torque developed by each of the motors and the minimum weight of the locomotive. Give the adhesive coefficient is 0.25. 10

16. Write short notes for the following :
    a) Welding transformer
    b) Contactor control circuit
    c) Neon signs. 10

17. Write brief note for the following :
    a) Specific energy consumption
    b) Stroboscopic effects
    c) High frequency eddy current heating. 10