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Question Paper Code: 97303

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Seventh Semester

Electrical and Electronics Engineering

19UEE703– Electric Energy Utilization and Conservation

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The voltage used for suburban train in D.C system is usually CO1- U

   (a) 12V (b) 24V (c) 220 V (d) 600V to 750V

2. The basic elements of a electric drive are CO1- U

   (a) Electric motor (b) Control system (c) both (a) & (b) (d) None of the above

3. Candela is the unit of CO2- U

   (a) Luminous flux (b) Luminous Intensity (c) Wavelength (d) Speed

4. The unit of solid angle is CO2- U

   (a) Degree (b) Radian (c) Steradian (d) Candela

5. Which of the following heating elements can give the highest temperature in resistance heating? CO3- U

   (a) Copper (b)Nickel Copper (c) Nichrome (d) Silicon’s carbide

6. Highest power factor can be expected in which method of heating? CO3- U

   (a) Electric arc heating (b) Dielectric heating

   (c) Induction heating (d) Resistance heating

7. Which of the following is the common application of air standard refrigeration system? CO4- U

   (a) cold storage (b) car air conditioning system

   (c) Domestic refrigerators (d) Aircraft air conditioning

8. Which of the following of the refrigerant is used as a refrigerant in Lithium Bromide Absorption Refrigeration system? CO4- U

(a) Water and Bromide (b) Ammonia and Water

(c) Ammonia and Lithium (d) Water and Water

9. As per BIS norms, the meter board and the main switchboard are fitted at a height of up to ……. From the ground surface CO5- U

(a) 2.75 (b) 2.0 (c) 1.5 (d) 2.5

10. Which of the following is not a switchgear Equipment? CO5- R

(a) Autotransformer (b) Fuse (c) Circuit breaker (d) Relay

PART – B (5 x 2= 10Marks)

11. What is regenerative braking? CO1- U

12. What is stroboscopic effect of fluorescent tubes? How to eliminate it? CO2- U

13. Enumerate he advantages of electric heating. CO3- U

14. Define the types of Compressor. CO4- U

15. List out the objectives of tariff. CO5- U

PART – C (5 x 16= 80 Marks)

16. (a) Explain the factors governing the selection of motors. CO1-U (16)

Or

(b) A suburban electric train has maximum speed of 65 km/hr. The scheduled speed with station stop of 30 sec is 43.5 km/hr. If acceleration is 1.3 km/hr/sec, find the value of retardation. The average distance between stops is 3 km. CO2-App (16)

17. (a) What are factors affecting the design of Lighting Scheme and Explain it with the justification. CO2-U (16)

Or

(b) An incandescent lamp hangs from the ceiling of a room. The illumination below the lamp vertically downwards is 80 lux. When the illumination is measured at a distance of 2 m from the vertical from the ceiling, its value is 40 lux. Find the candle power of the lamp and its vertical distance from the floor CO2-App (16)

18. (a) A piece of an insulating material 2 cm thick and 120 cm^2 in area is to be heated by dielectric heating. The material has a permeability of 5 and power factor 0.05. The power at 600 V is 200 W. Determine the frequency of supply. CO3- U (16)

Or

(b) Explain the various types of resistance welding with neat sketch CO3- App (16)

19. (a) Explain the working of domestic refrigerator with a neat sketch CO4- U (16)

Or

(b) The main air supply duct of an air conditioning system is 800 mm X 600 mm in cross section and carries 300 m3 / min of standard air. It branches into two ducts of cross section 600 mm X 500 mm and 600 mm X 400 mm. If the mean velocity in the larger branch is 480 m / min. Find (i)Mean velocity in the main duct and the smaller branch (ii) mean velocity pressure in each duct. CO4- App (16)

20. (a) List and explain in detail methods of power factor improvement. CO5- U (16)

Or

(b) Explain the measures relates to power quality. CO5- U (16)