BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – Dip.EE-2021
Course Name – Utilization, Traction, Heating and Drives
Course Code - DEE506
(Semester V)

Full Marks : 60   **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)   1 x 15=15

1. Choose the correct alternative from the following :

(i)   Identify an electric room heat convector the method of heating used is

a) Arc heating   b) Resistance heating
c) Induction heating   d) Dielectric heating

(ii) Select what is the ratio of illuminance at a point 5m just below a lamp emitting 100 candelas and at a point 5m away from the first point on the same horizontal plane?

a) 1:2   b) $\sqrt{2}$: 1
c) 1: 2$\sqrt{2}$ d) 2:1

(iii) Identify which of the method has leading power factor

a) Resistance heating   b) Dielectric heating
c) Arc heating   d) Induction heating

(iv) Tell that the return circuit for tramcars is through

a) neutral wire   b) rails
c) cables   d) common earthing

(v)   Identify that the desired illumination level on the working plane depends upon

a) Age group observers and Whether the object   b) Size of the object to be seen and its distance
   is stationary or moving   from the observer
c) Whether the object is to be seen for longer   d) All above factors
   duration or shorter duration of time

(vi) Select which of the following devices should be used as a switch for high power and high voltage application?

a) TRIAC   b) Thyristor
c) GTO   d) MOSFET

(vii) Tell that an electric drive is

a) A machine that converts electrical energy   b) A machine that converts mechanical energy
   into kinetic energy   into electrical energy

116- 48

c) A machine that converts electrical energy into mechanical energy

d) A machine that converts kinetic energy into electrical energy

(viii) Identify the supply frequency usually employed for high frequency eddy current heating is

a) 1 KHz.

b) 5 KHz.

c) 10 MHz

d) 10 KHz to 400 KHz

(ix) Tell that specific energy consumption becomes

a) more on steeper gradients

b) more with high train resistance

c) less if distance stops is more

d) all of the above

(x) Select the value of supply frequency for 25 kV single phase system

a) 50HZ

b) 60 HZ

c) 16HZ

d) 25HZ

(xi) Identify the unit of electrical energy

a) Joules

b) Watt-sec

c) Kilowatt-hour

d) All of these(Y)

(xii) If the friction force value is doubled, calculate the new value of the coefficient of friction.

a) 4 times of the original value

b) 2 times of the original value

c) 7 times of the original value

d) Remains the same

(xiii) Identify that power factor can be improved by using

a) Static capacitors

b) Synchronous condenser

c) Phase advancer

d) All of above

(xiv) Identify the metal surfaces for electrical resistance welding must be

a) rough

b) clean

c) moistened

d) coloured

(xv) Tell that induction heating takes place in

a) conducting but non-magnetic materials.

b) conducting materials which may be either magnetic or non-magnetic materials.

c) insulating materials

d) conducting and magnetic materials.

Group-B
(Short Answer Type Questions)
3 x 5=15

2. Explain why electric traction system is considered superior over other systems of traction in India, even when there is a power crisis in India. (3)
3. Define the term electric arc welding. (3)
4. Explain the meaning of V/F control? (3)
5. Discuss about the need of energy conservation. (3)
6. Explain the construction of verical core type induction furnance. (3)

OR

Explain the advantages of dielectric heating (3)

Group-C
(Long Answer Type Questions)
5 x 6=30

7. Explain the procedure of finding how many lights are needed in a room. (5)
8. Briefly discuss about advantage and disadvantage of electric drive. (5)
9. Explain briefly the types of tariff. (5)
10. A suburban train with average speed 36 kmph between two stations 1.8 km apart.Values of accelaration and retardation are 1.8 km/h/s and 3.6 km/h/s. Evaluate the maximum speed of the train assuming trapizoidal speed of curve. (5)

11. Explain speed time for sub urban services. (5)

12. Express the working of sodium vapour lamp with necessary circuit diagram. (5)

OR

Compare between conduction,convection and radiation. (5)

****