DEPARTMENT OF ELECTRICAL ENGINEERING

QUESTION BANK ON

UTILIZATION OF ELECTRICAL ENERGY AND TRACTION

(6th Semester)

Important Questions on UEET

Ch.1. ELECTROLYTIC PROCESS

Short questions

1. What is an electrolyte?
2. What is an electrolytic process?
3. What is electrodeposition?
4. Define current efficiency and energy efficiency?
5. What is electroplating?
6. What are the applications of electrolysis?

Long questions

1. State and explain faradays laws of electrolysis?
2. What is the importance of electroplating?
3. Describe the process of electrolysis?
4. What are the factors governing electrodeposition?
5. What are the factors affecting the amount of deposition?

Ch.2. ELECTRICAL HEATING

Short questions

1. What are the different modes of heat transfer?
2. What are the advantages of electrical heating?
3. What is the basic principle of electrical heating?
4. What is dielectric heating?
5. What is microwave heating?

Long questions

1. Explain direct resistance heating method?
2. Discuss electrical heating with ovens (resistance furnace).
3. Explain the method of arc striking and how it is used for electrical heating?
4. What is the principle of induction heating?
5. Explain direct core type induction furnace.
6. Explain vertical core type induction furnace
7. Explain indirect core type induction furnace

Ch.3. ARC WELDING

Short questions

1. What is welding?
2. What is electrical welding?
3. What is arc welding?
4. What is seam welding?
5. Write about metallic arc welding

Long questions

1. Explain the principle of arc welding?
2. What are the types of arc welding? Explain each of them.
3. Describe briefly welding methods.

Ch.4. ILLUMINATION

Short questions

1. Define light and illumination.
2. Define: - luminous intensity, lumen, MHCP, MSCP, MHSCP, solid angle, luminous efficiency.
3. What is polar curves?
4. Define maintenance factor and depreciation factor.
5. What is flood lighting?
6. Why tungsten is used as filament material?
7. Which lamp is used as high lumen output and low consumption of energy?
8. What is the unit of luminous flux?
9. Give example of discharge lamp?
10. Give example of non-electrical source of light?

Long questions

1. State and explain laws of illuminations.
2. With the help of circuit diagram explain working of fluorescent lamp.
3. Describe incandescent lamp with neat diagram,
4. Short notes on-(i) Mercury vapor lamp
   (ii) neon indicator lamp
   (iii) sodium vapor lamp

Ch.5. INDUSTRIAL DRIVES

Short questions

1. State group and individual drives.
2. What do you mean by electrical drives?
3. What are the applications of (i) DC series motors (ii) induction motors (iii) synchronous motors

Long questions

1. How group drive is different from individual drive ?
2. Draw the starting and running characteristics ofI)DC
   series motor
   ii) DC shunt motor
   iii) DC compound motor
   iv) induction motor

3. Write applications of
    I) DC series motor
    ii) DC shunt motor
    iii) DC compound motor
    iv) induction motor
    v) 3-ph synchronous motor

Ch.6. ELECTRICAL TRACTION

Short questions

1. What is mean by electric traction.
2. What is mean by regenerative braking?
3. What is meant by plugging?

Long questions

1. Describe the speed control of motors?
2. Explain braking mechanism in electric traction.
3. Write short notes on i) Regenerative braking
    ii) dynamic braking
    iii) Magnetic braking or eddy current braking.

CHAPTER 1
ELECTROLYTIC PROCESS

1)The power required for electro-deposition is
a. DC and very low voltage
b. DC and high voltage
c. AC and very low voltage
d. AC and high voltage

1)Electroplating is done
a. To protect the metals against corrosion
b. To give shiny appearance to articles
c. To repair the worn-out materials
d. All of these

3) The metal oxide rectifier used for electrolytic process is placed along with the transformer
a. Inside the oil
b. Outside the transformer but near to it
c. Outside the transformer but far from it
d. Half immersed in the oil

4) Throwing power can be improved by
a. Increasing distance between the anode and cathode
b. By reducing the voltage drop at the cathode
c. By increasing current density
d. Only (a) and (b)

5) Throwing power is the ability of the electrolyte to produce
a. Uniform deposit on an article of regular shape
b. Uniform deposit on an article of irregular shape
c. Non - uniform deposit on an article of regular shape
d. Non - uniform deposit on an article of irregular shape

6) The metal which can be extracted from its ore by the method of electrolysis is /are
a. Zinc
b. Aluminum
c. Copper
d. All of these

7) According to the Faraday's first laws of electrolysis, the mass of substance liberated during electrolysis is

a. Directly proportional to the current flowing through the electrolyte
b. Directly proportional to time for which current flows
c. Directly proportional to the charge
d. Only (a) and (b)

8)The substance which decompose when an electro current is passed is called

a. Electrolyte
b. Electrolysis
c. Electroplating
d. Electrodeposition

9)The ratio of atomic weight to atomic valency is _____

a. Chemical equivalent weight
b. Electro chemical equivalent
c. Atomic mass
d None of these

10)The process of electrolysis is based on _____.

a. Lenz's Law
b. Ohm's Law
c. Faraday's Law
d. Coulomb's Law

11)When a ring of iron is to be given a copper coating, the electrolyte used is

a. $CuSO_4$
b. NaCl
c. H_2SO_4
d. HCl

12)The process of depositing a metal on the surface of some other metal by electrolysis is called _____.

a. electrolyte
b. electromagnet
c. electroplating
d. electrochemistry

13)How is time related to the quantity of electro deposition?

a. directly proportional
b. inversely proportional
c. not related
d none of the above

14)Current per unit area is known as:

a. current density
b. volume
c. strength of solution
d. efficiency

15)The ratio of actual quantity of substance to the theoretical quantity is called _____.

a. energy efficiency
b. current efficiency
c. voltage
d. chemical equivalent

16)The _____ of an atom or a group of atoms is the no of Hydrogen atoms with which it will react

a. valency
b. atomic weight
c. atomic mass
d. none of the above

17)The factors affecting the amount of electro deposition are:

a. time
b. efficiency
c. current
d. all of the above

18) The process of decomposition of electrolyte by the passage of electric current through them is called

a. electrolyte
b. electrolysis
c. electrodeposition
d. electroplating

19)What will be the type of deposit at low value of current density?

a. coarse and crystalline
b. uniform and fine ground
c. spongy
d. porous

2 MARKS QUESTIONS

1. What is an electrolyte?
2. What is electrolysis?
3. What is electroplating?
4. Define chemical equivalent weight.
5. Define electro chemical equivalent.
6. Give few applications of electrolysis.
7. State Faraday's first law of electrolysis.
8. State Faraday's second law of electrolysis.
9. Define current efficiency.
10. Define energy efficiency.
11. What is electrodeposition.
12. State some factors affecting the amount of electrodeposition.

CHAPTER 2
ELECTRIC HEATING

1) Hysteresis loss and eddy current loss are used in
A. Induction heating of steel
B. Dielectric heating
C. Induction heating of brass
D. Resistance heating

2) Ajax Wyatt furnace is started when
A. It is filled below core level
B. It is filled above core level
C. It is fully empty
D. None of the above

3) In direct arc furnace which of the following has highest value?
A. Current
B. Voltage
C. Power factor
D. All of the above

4) Direct arc furnaces have which of the following power factors?
A. Unity
B. Low, lagging
C. Low, leading
D. Any of the above

5) _____ Is used for heating non-conducting materials
A. Eddy current heating
B. Arc heating
C. Induction heating
D. Dielectric heating

6) Induction heating process is based on which of the following principles?
A. Thermal ion release principal
B. Nucleate heating principal
C. Resistance heating principal
D. Electromagnetic induction principle

7) For heating element high resistivity material is chosen to
A. Reduce the length of heating element
B. Increase the life of the heating element
C. Reduce the effect of oxidation
D. Producing large amount of heat

8) Induction heating takes place in which of the following?

A. Insulating materials
B. Conducting materials which are magnetic
C. Conducting materials which are non-magnetic
D. Conducting materials which may or may not be magnetic

9) In the indirect resistance heating method, maximum heat transfer takes place by

A. Radiation
B. Convection
C. Conduction
D. Any of the above

10) Conduction mode of heat transfer takes place in

A. Solids
B. Liquids
C. Gases
D. All of the above

11) Salt bath is an example of

A. Direct resistance heating
B. Indirect resistance heating
C. Both
D. None of the above

12) In direct arc furnace the arc takes place between

A. Electrodes and charge
B. Between the electrodes
C. Inside the charge
D. All of the above

13) _____ is also known as high frequency capacitive heating.

A. Dielectric heating
B. Microwave heating
C. Induction heating
D. Resistance heating

14) Applications of dielectric heating are

A. In wood processing industry
B. For baking foundry cores
C. For food processing
D. All of the above

15) Automatic temperature control can be provided in

A. Indirect resistance heating
B. Direct resistance heating
C. Both
D. None of the above

2 Marks Questions:

1. Define the principle behind electrical heating.
2. What are the modes of transmission of heat.
3. What is Stefan's Law.
4. What are the advantages of electric heating.
5. What is resistance heating.
6. What are the methods of resistance heating.
7. What are the types of arc furnaces used for melting.
8. What is induction heating.
9. What are the types of induction heating.
10. What is dielectric heating.
11. Give two applications of dielectric heating.
12. Define the principle of microwave heating.
13. Give two applications of microwave heating.
14. What is skin effect.
15. Mention two basic requirements of an electric arc furnace.