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OIEE-002

00381

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

Term-End Examination

June, 2013

OIEE-002 : ELECTRICAL ENGINEERING MATERIAL

Time : 2 hours *Maximum Marks : 70*

Note : *All questions carry **equal** marks. **Q. No 1** is **compulsory.** Attempt **any four** questions out of **Q. No 02** to **08***

1. Choose the alternative which answers the questions given below correctly. **2x7=14**

   (a) In a photostat machine, the drum is made of :

   (i) cadmiumcoating
   (ii) silicon coating
   (iii) selenium coating
   (iv) zircon coating

   (b) With the increase in temperature, the mean free path :

   (i) decreases
   (ii) increases
   (iii) remains unchanged
   (iv) vanishes

(c) Highest electrical resistivity exists in :

(i) platinium wire

(ii) nichrome wire

(iii) silver wire

(iv) kanthal wire

(d) A ferroelectric material exhibits :

(i) spontaneous magnetisation

(ii) hysteresis effect with polarization

(iii) no spontaneous magnetisation

(iv) super conducting states.

(e) Insulating materials that can with stand a temperature above 180°C is of :

(i) Class A type

(ii) Class B type

(iii) Class C type

(iv) Class H type

(f) Line insulators are made of :

(i) porcelain

(ii) mica

(iii) marble

(iv) PVC

(g) The residual magnetic flux density is more in case of :

(i) metallic magnets

(ii) ceramic magnets

(iii) graphite

(iv) iron oxide

2. (a) What do you mean by bonding in solids ? Why are some solids strongly bonded than others ? 7

(b) Discuss Fermi Cloud as regards metallic bond. 7

3. Enumerate the characteristics of a good conductor. Discuss the effects of different factors on resistivity of a conductor. 14

4. Classify dielectric materials and quote examples of each type. How do you compare solid, liquid and gaseous dielectric with each other ? 14

5. (a) Why are the dielectric glazed ? How do the relaxation time and power factor influence the dielectric properties ? 7

(b) Enumerate different kinds of polarization processes. Explain their mechanism, and temperature dependence. 7

6. What insulating materials would you select for the following ? Mention the reason. 2x7=14

(a) cable jointing box

(b) high-voltage cable

(c) low-voltage cable

(d) flexible wire

(e) heating elements in an oven

(f) electric iron

(g) Distribution board

7. Explain the mechanism of origin of permanent magnetic dipole. Describe all possible applications of magnetic materials. What is cunife ? How is it different from cunico ? **14**

8. Write short notes on ***any four*** of the following : **3.5x4=14**

   (a) ionic and covalent bond

   (b) super conductivity

   (c) dielectric break down in solids

   (d) Townsend criterion

   (e) dielectric gases

   (f) Magnetostriction