

- Q.25 Name thermal properties of materials.  
 Q.26 Draw  $\text{Na}_2\text{O}$ - $\text{SiO}_2$  phase diagram.  
 Q.27 Explain physical properties of materials.  
 Q.28 List thermal properties of materials.  
 Q.29 Explain components and degree of freedom.  
 Q.30 Discuss application of phase rule.  
 Q.31 Explain amorphous materials and crystalline materials.  
 Q.32 Explain physical properties of clays.  
 Q.33 Explain components and degree of freedom.  
 Q.34 Differentiate creep and fatigue fracture.  
 Q.35 Discuss heat capacity and specific heat.

#### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions.  $(2 \times 10 = 20)$

- Q.36 Explain alumina silica phase diagram.  
 Q.37 Explain magnetic properties or thermal properties of materials.  
 Q.38 Explain Point, Line and surface defects of materials.

No. of Printed Pages : 4  
Roll No. ....

180431

#### **3rd Sem / Ceramic Engineering Subject:- Ceramics Science**

Time : 3Hrs.

M.M. : 100

#### **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory  $(10 \times 1 = 10)$

- Q.1 The correct order of filling electrons in orbital's is.....  
 a) 1s, 2s, 2p, 3s, 3p, 3d, 4s  
 b) 1s, 2s, 2p, 3s, 3p, 3d, 4p  
 c) 1s, 2s, 2p, 3s, 3p, 4s, 3d  
 d) 4p, 4s, 3d, 3p, 3s, 2p, 2s  
 Q.2 Formula of Kaolin is \_\_\_\_\_  
 a)  $\text{Al}_2\text{O}_3\text{SiO}_2$       b)  $\text{Al}_2\text{O}_32\text{SiO}_2\text{H}_2\text{O}$   
 c)  $\text{Al}_2\text{O}_32\text{SiO}_2$       d)  $\text{Al}_2\text{O}_32\text{SiO}_2\text{H}_2\text{O}$   
 Q.3 In face centered cubic crystal system number of atoms per unit cell is \_\_\_\_\_  
 a) 1      b) 2  
 c) 3      d) 4  
 Q.4 Gibbs phase rule for general system  
 a)  $P+F=C+1$       b)  $P+F=C-1$   
 c)  $P+F=C-2$       d)  $P+F=C+2$   
 Q.5 Phase diagram help to select \_\_\_\_\_ of materials

(120)

(4)

180431

(1)

180431

- a) Firing Schedule      b) Mixing behavior  
 c) Composition      d) Both 'a' & 'c'
- Q.6 An electrical insulator is one which \_\_\_\_\_ electric current.  
 a) Conduct      b) Resist  
 c) Both a and b      d) None of the above
- Q.7 Maximum number of electrons in s-orbital is \_\_\_\_\_  
 a) 1      b) 2  
 c) 3      d) 6
- Q.8 In crystalline materials atoms are arranged in \_\_\_\_\_ manner.  
 a) Randomly      b) Regular  
 c) Haphazardly      d) None of the above
- Q.9 In \_\_\_\_\_ crystal system atoms occupies corner position of unit cell.  
 a) Simple Cubic      b) Body Centered  
 c) Face centered      d) Hexagonal
- Q.10 Vacancies defect is an example of  
 a) Surface defect      b) Line defect  
 c) Point defect      d) None of the above

### **SECTION-B**

- Note:** Objective type questions. All questions are compulsory. (10x1=10)
- Q.11 Maximum number of electrons in p-orbital is \_\_\_\_\_.

- Q.12 The montmorillonite clay mineral is highly plastic.(True/False)
- Q.13 In amorphous materials atoms are arranged in regular fashion.(True/False)
- Q.14 In simple cubic crystal all sides are same. (True/False)
- Q.15 Resistance is the opposing force offered by a material to flow of electric current. (True/False)
- Q.16 Covalent bond is formed by \_\_\_\_\_ of electrons between two atoms. (Sharing/Transfer)
- Q.17 Number of components in unary phase diagram is one. (True/False)
- Q.18 The number of magnetic lines of force in a magnetic circuit is called \_\_\_\_\_. (Magnetic flux, flux density)
- Q.19 Example of binary phase diagram is \_\_\_\_\_.
- Q.20 The crystalline solids have regular arrangement of atoms. (True/False)

### **SECTION-C**

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Explain theory of valance.
- Q.22 Explain casting slips.
- Q.23 Explain elasticity and plasticity properties of materials.
- Q.24 With the help of an example explain ionic bonding.