

Bachelor of Vocation in Pottery & Ceramic Examination-2016  
Semester-I  
Ceramic Raw Materials  
Paper - BVoc-I/03

Time: 3 Hrs

Full Marks: 80

Questions are of value as indicated in the margin.

Group-A

Question no. 1 is compulsory

1. Choose the correct alternatives of the following questions. Answer all questions.

Questions (i) to (x)

10 x 1 = 10

(i) The stable crystalline form of 'Silica' at room temperature is:

- a.  $\alpha$ -Quartz
- b.  $\beta$ -Quartz
- c.  $\alpha$ -Tridimite
- d. Cristoballite

(ii) Fire clay is:

- a. Disordered Montmorillonite
- b. Disordered Talc
- c. Disordered Kaolinite
- d. Disordered Pyrophyllite

(iii) On heating at 1200°C, China clay yields:

- a.  $\alpha$ -Alumina and Silica
- b. Silica
- c. Mullite & Cristollite
- d. Alumina

(iv) Non-clay plastic material is:

- a. Zircon
- b. Vermiculite
- c. Steatite
- d. Montmorillonite

(v) Fly ash is a By-product of:

- a. Steel plant
- b. Aluminium Industry
- c. Thermal power plant
- d. Copper Industry

(vi) Dehydroxylation temperature of kaolinite is

- a. 250°C
- b. 450°C
- c. 600°C
- d. 950°C

(vii) Minerological name of Potash feldspar is

- a. Orthoclase
- b. Anorthite
- c. Albite
- d. None

(viii) Chemical formula of Pyrophyllite is

- a.  $\text{Al}_2\text{O}_3 \cdot 4\text{SiO}_2 \cdot \text{H}_2\text{O}$
- b.  $2\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot \text{H}_2\text{O}$
- c.  $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$
- d.  $\text{Al}_2\text{O}_3 \cdot 3\text{SiO}_2 \cdot \text{H}_2\text{O}$

(ix) Nepheline syenite is used as substitute of

- a. Quartz
- b. Feldspar
- c. Talc
- d. Kaolin

(x) Wollastonite is

- a.  $\text{CaSiO}_3$
- b.  $\text{CaCO}_3$
- c.  $\text{Ca}_3(\text{PO}_4)_2$
- d. None

P.T.O.

(2)

Group-B

Answer any five questions

2. What is clay? What are the most prominent properties of clay? 2+3=5
3. What is zircon? What is the significance of its use in ceramic Industry? 1+4=5
4. Define primary clay. How does it form? 2+3=5
5. What is the source of good quality bone ash? Write the approximate formula of bone ash. Mention the raw materials used for making bone china bodies with probable composition. 1+1+3=5
6. Write the differences between quartz, flint and silica sand. State their availability in India. 2+3=5
7. Write the differences between Ball clay and China clay. 5
8. Draw the structure of kaolinite. 5

Group-C

Answer any three questions

9. Discuss 5x3=15
    - a. Why ball clay is more plastic than china clay?
    - b. Why pottash feldspar is preferably used in pottery body?
    - c. Why clay minerals are plastic?
    - d. Why montmorillonite shows swelling properties?
    - e. Why a considerable amount of talc is used in ceramic cooking ware?
  10. What are the main function of clay, quartz and feldspar in a pottery body? State the characteristics for selection of these raw materials along with their approximate percentage range used to prepare a suitable pottery body. 6+6+3=15
  11. What is plaster of paris? How does it prepared from gypsum? Discuss its application in pottery industry. 3+7+5=15
  12. Name the important raw materials used as a fluxing agent in pottery composition. State the empirical formula of different types of feldspar. Calculate the theoretical percentage of alkali in soda and potash feldspar. 2+3+10=15
  13. Write short notes on (*any three*)
    - a. Fire clay
    - b. Bentonite
    - c. Talc
    - d. Wollastonite
    - e. Quartz
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