



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Tech(CT)/SEM-5/CT-503/2009-10**

**2009**

**WHITEWARES – I**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives of the following :  $10 \times 1 = 10$ 
  - i) The main mineralogical phases in vitrified porcelain is
    - a) mullite
    - b) corundum
    - c) free quartz
    - d) none of these.
  - ii) Which of the following oxides is added in semi-conducting glaze ?
    - a)  $\text{Na}_2\text{O}$
    - b)  $\text{TiO}_2$
    - c)  $\text{Fe}_2\text{O}_3$
    - d) none of these.
  - iii) Rutile is popular opacifier than anatase due to
    - a) higher refractive index of rutile than anatase
    - b) lower refractive index of rutile than anatase
    - c) both have same refractive index
    - d) none of these.



- iv) Lead glaze always should be fritted due to
  - a) toxic action of lead compound
  - b) high solubility of lead
  - c) low solubility of lead
  - d) none of these.
- v) Glaze slip should be
  - a) flocculated nature
  - b) deflocculated nature
  - c) higher dense
  - d) none of these.
- vi) In which period, rate of temperature rise can be more ?
  - a) Constant rate period
  - b) Falling rate period
  - c) At the leather hard point
  - d) End of falling rate period.
- vii) Moisture content of the dried body should be
  - a) less than 0.5%
  - b) less than or equal to 1.0%
  - c) less than 2%
  - d) 0%.
- viii) For the glaze, type of feldspar used is
  - a) Na-feldspar
  - b) K-feldspar
  - c) Ca-feldspar
  - d) mixture of all of the three.



- ix) One of the purpose of extrusion is
- a) shaping
  - b) removal of soluble salt
  - c) homogenisation
  - d) to increase plasticity.
- x) Engobe is
- a) coating on the glaze
  - b) coating on the inner decoration
  - c) layer in between body and glaze
  - d) all of these.

#### GROUP – B

##### ( Short Answer Type Questions )

Answer any *three* of the following.  $3 \times 5 = 15$

2. What is frit ? Draw a descriptive flowchart for preparation of frit. 1 + 4
3. Discuss briefly internal and external factors of drying.
4. Discuss briefly the process of clay. Why is it needed ? 4 + 1
5. Explain jollying, jiggering, turning and die making. 5
6. What are the criteria for selection of glaze opacifier ? Explain with example.

#### GROUP – C

##### ( Long Answer Type Questions )

Answer any *three* of the following.  $3 \times 15 = 45$

7. Discuss briefly the firing schedule of bone china body with mentioning the relevant phase diagram. What is the mineralogical composition of fired bone china body ? Discuss the cause of whiteness and translucency of bone china body. 6 + 5 + 4



8. Why are flow properties of glaze slip more important ?  
Discuss the flow properties of glaze with respect to surface tension and viscosity of glaze slip. How does glaze composition affect this property ? Why is glost firing advisable in reducing atmosphere ?  
 $2 + 7 + 4 + 2$
9. Why and how aging is done ? Explain with a sketch the operation of an extruder. Why is S-crack occurred after extrusion ? What are the purposes of filter pressing ?  
 $3 + 8 + 2 + 2$
10. Explain how different factors influence firing schedule. Discuss heat of reaction of a ceramic whiteware body. State with schematic diagram formation of microstructure during firing.  
 $5 + 5 + 5$
11. Discuss briefly the factors that affect the attachment of glaze on the body. Discuss the effect of composition on glaze formulations with adjusted thermal expansion of glaze and body. What is crazing and peeling ? How is it adjusted ?  
 $4 + 4 + 4 + 3$
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