*Name :* .....

*Roll No. :* .....

*Invigilator's Signature :* .....

**CS/B.Tech (CT)/SEM-5/CT-503/2011-12**

**2011**

# 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 for the following : 10 × 1 = 10

   i) In which period, rate of drying can be more ?

      a) Constant rate period

      b) Falling rate period

      c) At the leather hard point

      d) End of falling rate period.

   ii) Moisture content of the dried body should be

      a) less than 1·5%

      b) less than or equal to 1·0%

      c) less than 2%

      d) 0%.

iii) For the body, type of feldspar used is
   a) Na - Feldspar
   b) K - Feldspar
   c) Ca - Feldspar
   d) Mixture of all the three.

iv) One of the purpose of ageing is
   a) faster processing
   b) removal of soluble salt
   c) homogenisation
   d) to increase plasticity.

v) For quicker settling of particles, the chemical used is
   a) Sodium carbonate  b) Hydrochloric acid
   c) Sodium silicate  d) None of these.

vi) The main mineralogical phase in vitrified porcelain is
   a) Mullite  b) Corrundum
   c) Free quartz  d) None of these.

vii) Which of the following is the best opacifier in glaze ?
   a) Mullite  b) Rutile
   c) Magnetite  d) None of these.

viii) The thermal expansion of glaze should be ..... than the body.
   a) higher  b) lower
   c) equal  d) none of these.

ix) Hard porcelain and soft porcelain is distinguished by
   a) Level of porosity  b) Glossiness
   c) Brittleness  d) None of these.

x) The water absorption of earthenware body is
   a) 4% to 15%  b) 1% to 5%
   c) 4% to 5%  d) None of these.

## GROUP – B

### ( Short Answer Type Questions )

Write short notes on any *three* of the following. 3 × 5 = 15

2. Factors for determination of firing schedule.

3. Filter pressing.

4. Slip casting.

5. Semiconducting glaze.

6. Glaze opacity and opacifier.

## GROUP – C

### ( Long Answer Type Questions )

Answer any *three* of the following. 3 × 15 = 45

7. Why & how is ageing done ? Explain with a sketch, operation of an extruder. Why is *S*-crack occurred after extrusion ? State different shaping methods of whiteware bodies with moisture content. 3 + 8 + 2 + 2

8. Discuss heat of reaction of a ceramic whiteware body. State with schematic diagram formation of microstructure during firing. Discuss internal factors of drying. 6 + 3 + 6

9. What are the raw materials used for manufacture of bone china body ? Discuss the chemistry of firing of bone china body mentioning the relevant phase diagram. What are the mineralogical phases present in fired bone china body ? Discuss the cause of whiteness and translucency of fired bone china body. 2 + 5 + 3 + 5

10. Discuss briefly the factors affecting the attachment of glaze on the body. Discuss the effect of composition on glaze formulation with adjusted thermal expansion of glaze and body. What is crazing and peeling ? How is it adjusted ? 4 + 4 + 4 + 3

11. What is fritted glaze ? Show a descriptive flow chart for manufacture of frit. Discuss the role of viscosity and surface tension of glaze slip for its spreading uniformly. Explain how it is composition related. 2 + 3 + 6 + 4