





- iv) Fineness of OPC as per BIS is
- a)  $3500 \text{ cm}^2/\text{gm}$                       b)  $2250 \text{ cm}^2/\text{gm}$   
c)  $3000 \text{ cm}^2/\text{gm}$                       d) none of these.
- v) Purity of HAC depends mainly on
- a) CaO content                      b)  $\text{Al}_2\text{O}_3$  content  
c)  $\text{Fe}_2\text{O}_3$  content                      d)  $\text{SiO}_2$  content.
- vi) False set occurs in OPC due to formation of
- a) ettringite phase                      b) syngenite phase  
c)  $\text{C}_3\text{A}$  phase                      d) none of these.
- vii) Main phase of HAC is
- a)  $\text{CA}_2$                       b)  $\text{C}_2\text{AS}$   
c) CA                      d)  $\text{C}_2\text{S}$ .
- viii) Flash set occurs in OPC due to
- a)  $\text{C}_2\text{S}$  phase                      b)  $\text{C}_3\text{A}$  phase  
c)  $\text{C}_3\text{S}$  phase                      d)  $\text{C}_4\text{AF}$  phase.
- ix) Granulated BFS is used for slag cement because of
- a) crystalline in nature                      b) amorphous in nature  
c) lower setting time                      d) none of these.
- x) Wash water from a concrete cannot be used as mixing water in cement due to
- a) low lime and alkali content  
b) high lime and alkali content  
c) high  $\text{SiO}_2$  content  
d) none of these.



**GROUP – B**

**( Short Answer Type Questions )**

Answer any *three* of the following.

$3 \times 5 = 15$

2. What are the processes used for cement manufacturing ?

What are the advantages and disadvantages of these processes ?

$3 + 2$

3. Write short notes on any *two* of the following :

$2 \times 2 \frac{1}{2}$

a) Oil-well cement

b) Coloured cement

c) Cement paints

d) Portland blast furnace slag cement.

4. What do you mean by bleeding of concrete ? Is it always harmful or not ? Explain.

$2 + 3$

5. What do you mean by flash set and false set of OPC ? What are the causes of these types of setting ?

$2 + 3$

6. What are silica modulus, iron modulus and chemical modulus ? What do you can guess from silica modulus ?

$3 + 2$



**GROUP – C**

**( Long Answer Type Questions )**

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

7. What do you mean by setting and hardening of Portland cement ? What changes occur during setting of Portland cement ? Discuss with a diagram the setting, hardening and ageing process of OPC.  $3 + 6 + 6$
8. What do you mean by pozzolana ? What are the factors influencing the pozzolanic activity of a pozzolana ? Discuss the lime pozzolona reaction and also mention the products formed in the lime pozzolana reaction.  $2 + 3 + 6 + 4$
9. What is concrete and what is its composition ? What do you mean by bad concrete and good concrete ? What do you mean by workability of concrete and what factors are responsible for workability of concrete ?  $4 + 2 + 2 + 4 + 3$
10. What are the mineralogical phases present in the HAC ? Write with a flow-chart for the manufacture of HAC. Discuss the hydration reaction of HAC.  $4 + 6 + 5$
11. Define and signify the following :
  - a) Insoluble residue in cement
  - b) Free lime in OPC.

Distinguish between initial set and final set. On what factors does setting time of OPC depend ? What do you mean by soundness of cement ? How is it experimentally measured ?

$2 + 2 + 3 + 2 + 2 + 4$