

**DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY,  
LONERE – RAIGAD -402 103  
Mid Semester Examination – October - 2017**

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**Branch: B.Arch (.....)**

**Sem.:- I**

**Subject with Subject Code:- AR1010004**

Building Construction Technology & Materials-1

**Marks: 50**

**Date:-**

**Time:- 1 Hr.**

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**Instructions:- Question paper consists of two parts (part-A and part-B)**

**Part-A: question No.1 is compulsory**

**Question no.2 attempt any five question out of  
seven question**

**(Mark: 30)**

**Part-B question no 3 is compulsory**

**Question No.4 attempt any five out of six**

**(Mark: 20)**

**(Part –A)**

1. Describe in detail how lime is manufactured with sketches?

**ANSWER**

1 Collection of lime stone

2 Burning or calcination

Clamp

Intermittent kiln

Intermittent flame kiln continuous kiln

Continuous flame type kiln

3 Slaking of burnt or calcined lime

Or

Explain all the methods of manufacturing of brick with sketches?

**ANSWER**

- 1 Preparation of clay
- 2 Pugging or tempering of the clay
- 3 Moulding of bricks
- 4 Drying of bricks
- 5 Burning of bricks

**(Mark:10)**

2. Write short notes:-(any five)

a). Rock forming minerals

**ANSWER**

Quartz  
Felspar  
Hornblend  
Mica  
Dolomite

b). Ingredients of cement

**ANSWER**

- 1 Alumina or clay
- 2 Silica
- 3 Lime
- 4 Iron
- 5 Magnesia
- 6 Sulphur trioxide
- 7 Alkaline
- 8 Calcium sulphate

c). Poor lime

**ANSWER**

Poor lime also called Meager or Lean lime, contains from 10 to 40 per cent impurities insoluble in acids such as sand and stones, takes longer to slake, does not increase in bulk, to such an extent (less than twice) as pure lime and has inferior plasticity color may not be white.

d). Properties of stone

**ANSWER**

- 1 General structure
- 2 Fineness of grains
- 3 Compactness

- 4 Durability
- 5 Strength
- 6 Hardness
- 7 Weight
- 8 Percentage of wear
- 9 Ease in dressing or working
- 10 Appearance
- 11 Porosity and absorption
- 12 Resistances
- 13 Weathering
- 14 Toughness

e). Tensile strength of cement

**ANSWER**

Tensile Strength of Cement test was formerly used to have an indirect indication of compressive strength of cement. It is at present generally used for the rapid hardening cement.

f). Types of rocks

**ANSWER**

- 1 Geological
  - igneous
  - sedimentary
  - metamorphic

2 Physical

- stratified
- unstratified
- foliated or laminated

3 Chemical

- silicious
- argillaceous
- calcareous

g). Setting and fineness of cement

**ANSWER**

**Setting of cement**

When water is added to cement, the resulting paste starts to stiffen and gain strength and lose the consistency simultaneously. The term setting implies

solidification of the plastic cement paste. Initial and final setting times may be regarded as the two stiffening states of the cement. The beginning of solidification, called the initial set, marks the point in time when the paste has become unworkable. The time taken to solidify completely marks the final set, which should not be too long in order to resume construction activity within a reasonable time after the placement of concrete. Vicat's apparatus used for the purpose is shown in . The initial setting time may be defined as the time taken by the paste to stiffen to such an extent that the Vicat's needle is not permitted to move down through the paste to within  $5 \pm 0.5$  mm measured from the bottom of the mould. The final setting time is the time after which the paste becomes so hard that the angular attachment to the needle, under standard weight, fails to leave any mark on the hardened concrete. Initial and final setting times are the rheological properties of cement.

### **Fineness of cement**

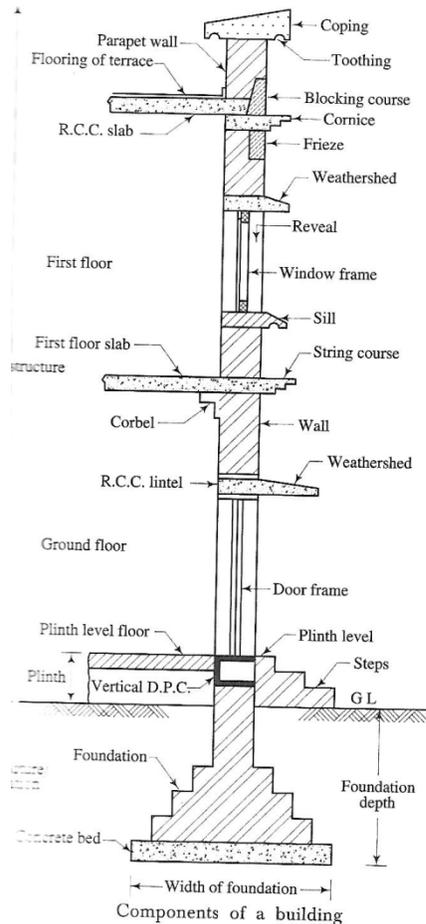
The degree of fineness of cement is the measure of the mean size of the grains in it. There are three methods for testing fineness: the sieve method—using 90 micron (sieve), the air permeability method—Nurse and Blains method and the sedimentation method—Wagner turbid meter method. The last two methods measure the surface area, whereas the first measures grain size. Since cement grains are finer than 90 micron, the sieve analysis method does not represent true mean size of cement grains. Also, the tiny cement grains tend to conglomerate into lumps resulting in distortion in the final grain size distribution curves. Considering these demerits, fineness is generally expressed in terms of specific area, which is the total surface area of the particles in unit weight of material.

**(Mark: 20)**

### **(Part-B)**

3. Draw a neat sketch showing all components of building and describe sub structure and super structure?

**ANSWER**



**(Mark: 10)**

4. Write a short on :-  
 a). Foundation and plinth

**ANSWER**

A foundation is necessary to evenly distribute the entire building load on the soil in such a manner that no damaging settlements take place. Hence, the foundations need to be constructed on good/solid ground.

A plinth is normally constructed just above the ground level and immediately after the foundation. It raises the floor above the ground level and herewith prevents surface water from entering the building.

- b). Coping  
**ANSWER**

consists of the capping or covering of a wall. A splayed or wedge coping slopes in a single direction; a saddle coping slopes to either side of a central high point. A coping may consist of stone (capstone), brick, tile, slate, metal, wood or thatch. In all cases it should be weathered to throw off the water

c). Parapet wall

**ANSWER**

A parapet wall is a low wall, usually enclosing a roof, or a protective barrier at the edge of a terrace or on the side of a bridge. In modern use, one is constructed to provide a barrier to prevent people or objects from falling from the edge of the structure and to slow the spread of fire; in earlier times, these walls were built to afford some protection for rooftop defenders of a structure, such as a castle or city walls, under attack.

d). Concrete bed

**ANSWER**

A concrete slab is a common structural element of modern buildings. Horizontal slabs of steel reinforced concrete, typically between 4 and 20 inches (100 and 500 millimeters) thick, are most often used to construct floors and ceilings, while thinner slabs are also used for exterior paving. Sometimes these thinner slabs, ranging from 2 inches (51 mm) to 6 inches (150 mm) thick, are called mud slabs, particularly when used under the main floor slabs or in crawl spaces.

In many domestic and industrial buildings a thick concrete slab, supported on foundations or directly on the subsoil, is used to construct the ground floor of a building. These can either be "ground-bearing" or "suspended" slabs. For Double-storey or Multi-Storey buildings, the use of a few common types of concrete suspended slabs are used.

e). Lintel and sill

**ANSWER**

Lintels are constructed just above the openings. It is normally a stone slab or a concrete slab.

Sill is the part of the wall that is just below the window.

f). Opening in wall

**ANSWER**

Openings are normally provided in the walls as door, windows and ventilators. Doors provide access; windows and ventilators provide light and ventilation.

**(Mark: 10)**