

KSU CET

S1 & S2 Notes

2019 Scheme



PART-A

1. Discuss about Group A and Group C buildings as per NBC.

Ans) Group A - Residential Buildings

- Building or any part of building in which sleeping accommodation is provided for normal residential purposes, with or without cooking or dining facilities.
- Buildings comes under this group include lodging or Rooming Houses, One or two family Private Dwellings, Dormitories, apartment Houses (Flats), Hotels.

Group C: Institutional Buildings

- These include any building or part of building, which is used for purposes such as a medical or other treatment or care of persons suffering from physical or mental illness, or diseases.
- Eg:- Hospitals and nursing homes, Custodial Institutions like homes for aged and infants, orphanages, penal institutions like Jails, prisons, mental hospitals.

2. What are the major constituents of cement and what are its properties?

- Ans)
- | | |
|--------------------------------------|--|
| • Lime (CaO) - Percentage (62-67)% | - Function |
| | • Important ingredient contributes to the strength. |
| | • Excess of lime make cement unsound; causes the cement to expand and disintegrate. |
| | • If deficient, strength of cement is decreased and cause cement to set quickly. |
| • Silica (SiO ₂) - 17-25 | • Imparts strength to the cement due to formation of dicalcium and tricalcium silicates. |
| | • Excess of silica increases the strength, but its setting time is prolonged. |

• Alumina (Al_2O_3) - (3-8)%

• Imparts quick setting property cement.

• It acts as a flux and lowers the clinkering temperature.

• Excess quantity weakens the cement.

• Calcium Sulphate (3-4)%
($CaSO_4$)

• This ingredient is in the form of gypsum.

• Increases the initial setting time of cement.

3 What are the properties and uses of first class brick?

- Ans) • Bricks of standard size and shape.
• Burnt in kiln (Table moulded)
• Full fill all desired properties of bricks.
• Used for superior works of permanent nature.

4 Define a) Pitch b) Ridge c) Wall plate d) Batten.

Ans) a) Pitch:- The distance between regularly spaced objects such as the distance between two regular threads.

b) Ridge:- The beam laid along the edge where two sloping sides of a roof meet at the top.

c) Wall plate:- These are long wooden members, which are provided on the top of stones or brick wall, for the purpose of fixing the feet of principal rafters.

d) Battens:- These are thin strips of wood, called scantlings, which are nailed to the rafters for laying roof materials above.

5 What is the importance of green building? List out any four materials used in the construction of green building.

Ans) A green building is one which uses less water, optimises energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building.

1. Retain the external environment at the location of the building.

2. Improve internal environment for the inhabitants.

3. Preserve the environment at places far away from the building.

Any 4 Green building Materials:-

- Earth materials
- Engineered wood
- Structural Insulated panels (SIPs)
- Cordwood.

Part-B

6 a) Discuss the role of a civil engineer in the infra structural development of a country.

b) List out the different activities which are prohibited as per CRZ norms.

Ans) a) • Construction of residential, commercial and industrial buildings.

- Town and City planning.
- Construction of well planned roads, railways, harbours, and airports.
- Construction of dams, water treatment plants and sewage treatment plants.
- Domestic, agricultural and industrial water supply.
- Secure and scientific waste disposal.
- Monitoring pollution and adopting control measures.

(b) There are 4 CRZ (Coastal regulation zone) areas

→ CRZ-I Prohibited activities

- * No new construction shall be permitted except project of atomic energy - pipelines, conveying systems, ...

→ CRZ-II Prohibited activities

- * Building shall be permitted only on the landward side of existing road or on the landward side of existing structures.
- * No other new buildings are provided.

→ CRZ-III - Prohibited activities

- * No constructions shall be permitted except for repairs or reconstructions.
- * Construction or reconstruction requires permission from competent authority.

→ CRZ IV - Prohibited activities.

* Construction activities are strictly prohibited.

* Traditional fishing and related activities are permitted with the condition that no waste shall be dumped.

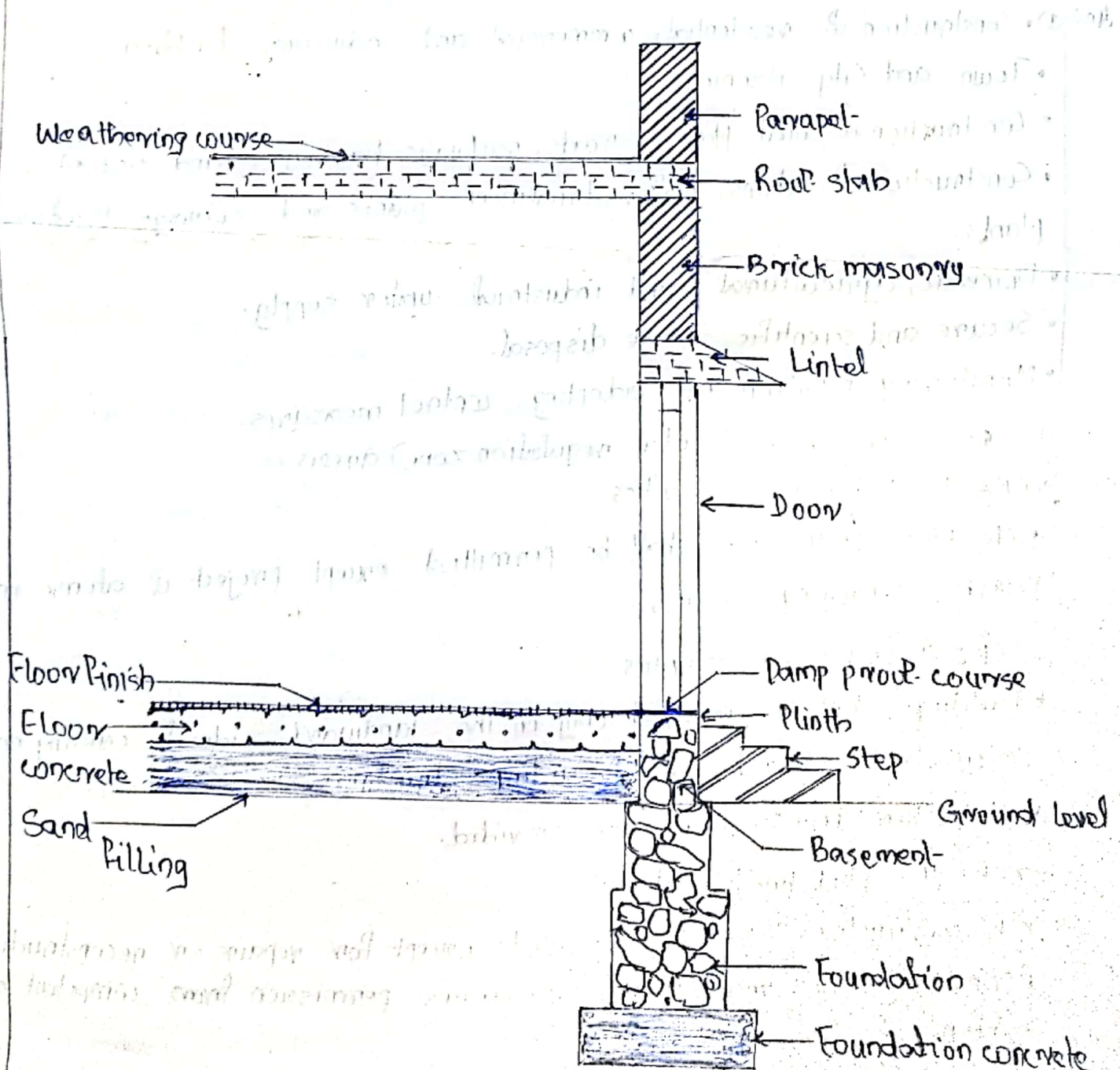
OR

7 (a) Discuss about the minimum size requirements of rooms for a residential buildings as per NBC.

(b) With Neat Sketch explain the different components of a buildings.

Ans) (a) Out of syllabus

(b) Structural components of a Building



(a) What is rapid hardening cement? What are its advantages and uses?

(b) Discuss about the primary classification of surveying?

Ans) (a) Rapid hardening cement develops strength rapidly.

• The strength obtained by such cement at the age of 3 days is same as that expected of ordinary Portland cement at 7 days.

Used in the following conditions.

* In pre-fabricated constructions.

* Road repair works.

* Situations where the framework is required to be removed early.

(b) Out of syllabus

OR

Q (a) Explain the different classification of timber.

(b) Explain the properties and uses of any two composite materials used in building construction.

Ans) (a) Classification of trees

→ Based on the growth of the timber

* Exogenous

Trees increase in bulk by growing outwards and distinct consecutive rings are formed in the horizontal section. Eg: - Teak, deodar, sal.

* Endogenous

Trees grow inward and fibrous mass is seen in their longitudinal section. Eg: - Bamboo, cane, palm.

→ Based on the condition of the timber.

* Converted timber: - This indicates timber which is sawn and cut into suitable.

* Rough timber: - This indicates timber which is obtained after felling a tree

* Standing timber: - This indicates timber contained in a living tree.

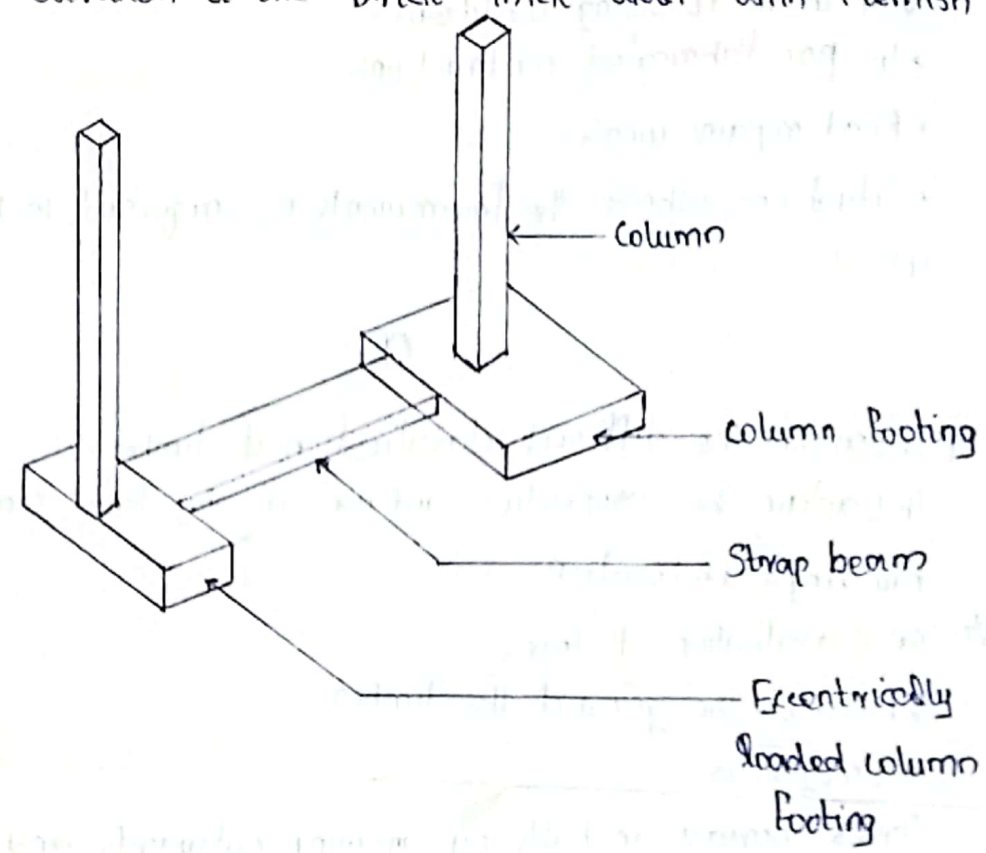
(b) composite materials: - is a solid material that results when two or more different materials, are combined to create a new substance whose properties are superior to those of the original components in a specific applications.

Eg: - Reinforced concrete instead of ordinary concrete which imparts both tensile strength compression strength. Steel bars in RCC can withstand

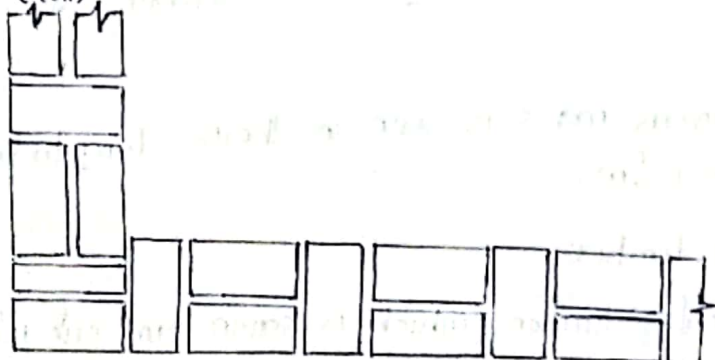
1. Alumina / Al₂O₃
 tensile stress. Concrete can with stand compression stress.
 2. composite wood such as plywood - which is used for Furnitures. And
 this material is from antimicrobial actions.

- 10 (a) with neat sketch explain strap footing.
 (b) Draw the plan and elevation of one brick thick wall with Flemish bond.

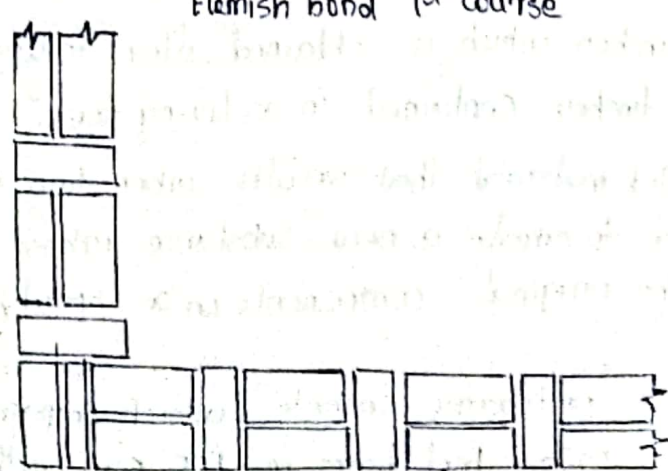
Ans) (a) Strap Footing:-



(b) Plan

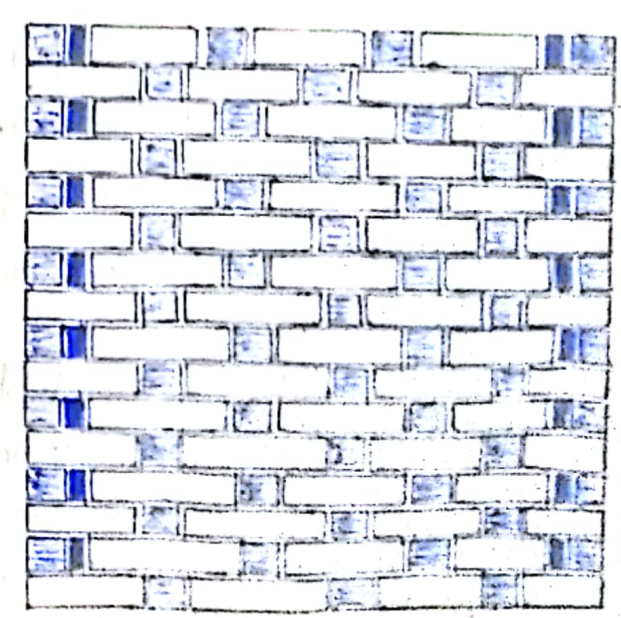


Flemish bond 1st course



Flemish bond 2nd course

Elevation

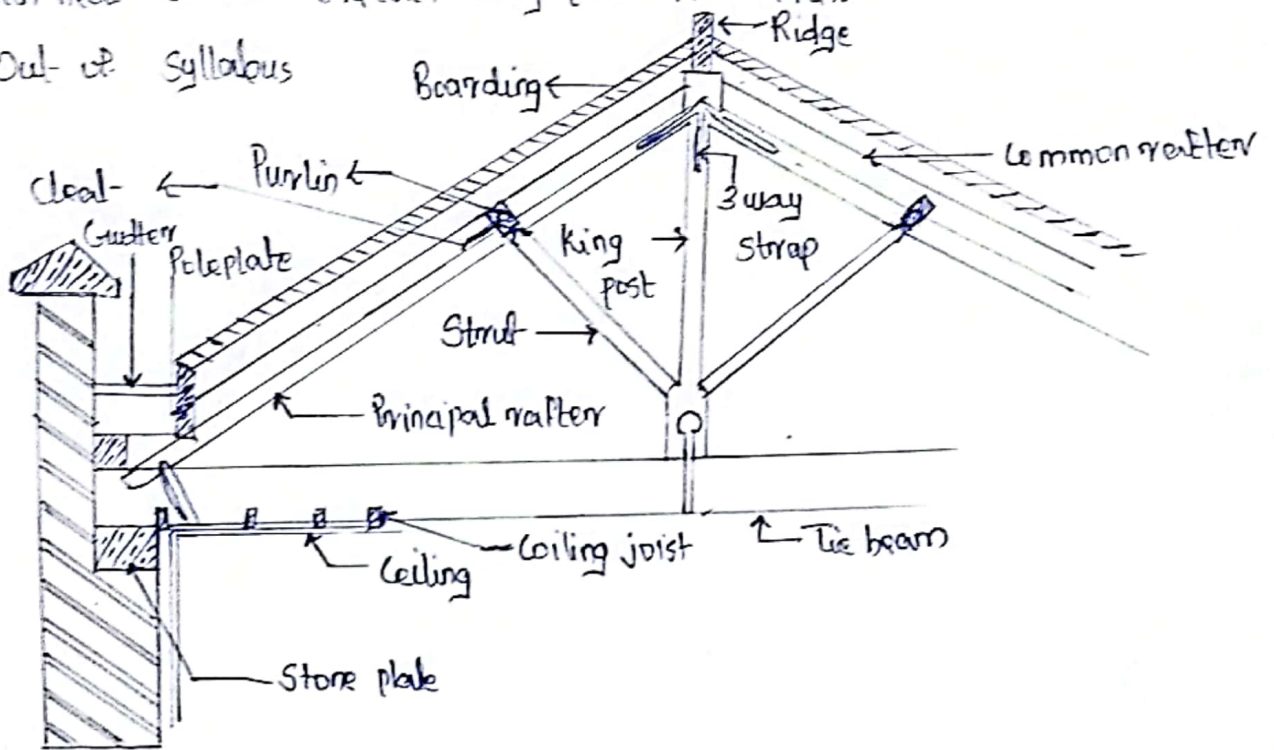


Q.5. (a) What are the various aspects to be considered in fire safety of building?

Ans (b) With neat sketch explain king post roof truss.

(a) Out of syllabus

(b)



King post roof truss consist of

- Lower tie beam
- 2 inclined principal rafters
- 2 struts
- King post
- * Spacing of the king-post truss is limited to 3m centre to centre
- * Suitable for spans varying from 5 to 8m.
- * King post prevents the tie beam from ~~sagging~~ sagging at its centre of the span.
- * Struts connected to the beams and the principal rafters in the inclined direction, prevent the sagging of principal rafters.