DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE – RAIGAD -402 103

Mid Semester Examination – March - 2018

Branch: CV205 **Sem.:- II**

Subject with Subject Code: - Basic Civil Engineering **Marks: 20**

Date: - **Time:- 1 Hr.**

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Instructions:-

1. Illustrate your answers with neat sketches, diagrams etc. where ever necessary.
2. Necessary data is given in the respective questions. If such data is not given, it means that the knowledge of that data is a part of the examination.
3. If some part or parameter is noticed to be missing, you many appropriately assume it and should mention it clearly.

(Marks)

Qu. 1 Select appropriate answer for the given multiple choice questions. (6 x 1 = 6)

i) ……is not a type of shallow foundation. [(d) Well foundation]

ii) Initial and finial setting time of Ordinary Portland Cement is.....[(d) 30 & 600 min.]

iii) A full brick or stone which is laid with its length parallel to the face of wall is known as.....[(c) stretcher]

iv) A 1st class brick immersed in water for 24 hours should not absorb water (by weight) more than…….. [(b) 20%]

v) ……is an example of substructure. [(a) footing]

vi) Load bearing structure is susceptible to…….[(d) earthquake load]

Qu. 2 Attempt any one of the following: (1 x 6 = 6)

(a) What are the advantages and disadvantages of brick masonry over stone masonry?

The following are the advantages and disadvantages of Brick Masonry over Stone Masonry:

Advantages:

1. Since shape and size of bricks are uniform, it does not need skilled labour for the construction.

2. Bricks are light in weight and hence handling them is easy.

3. Bricks are easily available around cities and their transportation cost is less because their weight is less. Stones are to be brought from quarries which are located only at few places.

4. It is possible to use all types of mortar in brick masonry. For unimportant

buildings even mud mortar can be used.

5. Thinner walls can be constructed with bricks but it is not so with stones.

6. It is easy to form openings for doors and windows.

7. Dead load of brick masonry is less.

8. In brick masonry mortar joints are thin and hence construction cost is reduced considerably.

9. Brick masonry has better fire and weather resistance compared to stone masonry.

Disadvantages:

1. Strength of brick masonry is less than that of stone masonry.

2. Durability of brick masonry is less.

3. Brick masonry needs plastering and plastered surface needs colour washing. Stone masonry doesn't need them and hence maintenance cost is more in brick masonry.

4. Brick masonry absorbs water and there is possibility of dampness. There is no such problem in stone masonry.

5. More architectural effects can be given in stone masonry compared to that in brick masonry.

6. Stone masonry gives massive appearance and hence monumental buildings are built in stone masonry.

(b) Define orientation of a building. Explain the various aspects of orientation.

Orientation means setting out the plan of the building with respect to north-south and east-west directions to provide an opportunity to user to enjoy sun-shine and breeze when required and to avoid the same whenever not required. This is also known as planning the aspect of a building.

Aspect means arrangement of doors, windows in the external wall to make good use of nature. This term has nothing to do with the architectural aspect of outlook of building. Kitchen should have eastern aspect to enjoy morning sunshine, means, kitchen should be located on the eastern side of the building to make use of morning sun rays.

The following are the required aspects for various parts of the building in the northern hemisphere of earth:

(a) Kitchen–eastern aspect.

(b) Dining room–southern aspect to enjoy winter sun.

(c) Drawing and living room–southern or south-eastern aspect to enjoy winter sun.

(d) Bed rooms–western or south-western aspect to enjoy breeze in summer.

(e) Reading room, class room, stairs, northern aspect to enjoy diffused light.

The following suggestions should be kept in mind in the orientation of a building in India:

(a) Place long walls towards north-south and short walls in east-west directions so as to reduce the area exposed to direct sun rays.

(b) Provide verandah and balcony on east and west.

(c) Provide chajjas on doors and windows on southern side to protect them from sun's rays.

Qu. 3 Attempt any two of the following: (2 x 4 = 8)

(a) Enlist any eight types of cements.

i. Ordinary Portland Cement
ii. Rapid Hardening Cement
iii. Extra Rapid Hardening Cement
iv. Sulphate Resisting Cement
v. Portland Slag Cement (PSC)
vi. Quick Setting Cement
vii. Super Sulphated Cement
viii. Low Heat Cement
ix. Portland Pozzolana Cement
x. Air-Entraining Cement
xi. Coloured Cement (White Cement)
xii. Hydrophobic cement
xiii. Masonry Cement
xiv. Expansive Cement
xv. IRS-T 40 Special Grade Cement
xvi. Oil-Well Cement
xvii. Rediset Cement
xviii. High Alumina Cement
xix. Very High Strength Cement

(b) What are the basic elements of a building?

The following are the basic elements of a building:

1. Foundation

2. Plinth

3. Walls and columns

4. Sills, lintels and chajjas

5. Doors and windows

6. Floors

7. Roofs

8. Steps, stairs and lifts

9. Finishing work

10. Building services.

(c) Explain in brief the laboratory tests for finding the water absorption of bricks.

Absorption Test:

Brick specimens are weighed dry.

Then they are immersed in water for a period of 24 hours.

The specimen are taken out and wiped with cloth.

The weight of each specimen in wet condition is determined.

The difference in weight indicates the water absorbed.

Then the percentage absorption is the ratio of water absorbed to dry weight multiplied by 100.

The average of five specimens is taken.

This value should not exceed 20 per cent.

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