



(Assume any missing data)

Answer any FIVE Questions

(5 X 20 = 100 Marks)

1. a) The civil engineering students of VIT are involved in construction of continuous reinforced concrete pavement. Type of cement used is ordinary Portland cement. Other materials include river sand and steel reinforcement are also provided. You are required to use sustainable coarse aggregate material in the construction of continuous reinforced concrete pavement. Suggest a suitable material. Also explain the manufacturing process, properties, advantages and limitations of suggested sustainable material. [10]
- b) You are required to determine the relative measure of resistance of coarse aggregate to sudden impact and wear. Identify the type of tests to determine the relative measure of resistance of coarse aggregate to sudden impact and wear. Also explain the test procedures of identified test methods. [10]
2. A leading company has planned to initiate a cement manufacturing plant at a place where the availability of water source is very limited. You are required to suggest a suitable process for production of portland cement to the company. With the aid of appropriate sketches, explain how the production of Portland cement using suggested process. Also briefly explain any other two different types of cement its composition and applications.
3. a) A precast concrete sandwiched insulated wall panel is widely used in the building industry due to its superior thermal and structural efficiency. These panels consists of two layers of concrete separated by a layer of thermal insulation. Suggest a suitable thermal insulating material used in the fabrication of precast sandwich insulated wall panels. Also explain the different properties of the suggested thermal insulating material used in the preparation of precast concrete sandwiched insulated wall panels. [10]
- b) Discuss the techno-economic aspects to be considered in civil infrastructure projects? [10]
4. a) Explain the methods that could enhance the mechanical and durability properties of wood. [10]
- b) A steel manufacturer is required to determine the tensile strength of mild and high strength steel reinforcement bars. Briefly explain the test procedure to determine its tensile strength. With the aid of appropriate diagram, explain the stress- strain behaviour of mild and high strength steel reinforcement bars and explain how the shape and dimension of the test specimen are expected to change during the test up to the point of failure with related sketches. [10]
5. A client has approached you to build a ten storey private hostel building using precast construction technique. Briefly explain why precast construction is becoming more popular in construction industry. Explain the different types of prefabricated systems that can be used. List out the advantages and limitations of precast construction.
6. a) With the aid of appropriate sketches, explain the characteristics of English and Flemish bonds in masonry construction. [10]
- b) A contractor is involved in the construction of temporary structure in order to carry out the repairing and painting works of an existing multi-storey building located at Katpadi, Vellore. Explain the temporary installations that can be erected for the repairing and painting works of existing multi-storey building. [10]



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