

SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF CIVIL ENGINEERING

QUESTION BANK



IV SEMESTER

CE3463 - CONSTRUCTION TECHNIQUES AND EQUIPMENTS

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SUBJECT CODE/NAME: CE3463 - CONSTRUCTION TECHNIQUES AND EQUIPMENTS

SEM/YEAR: IV/II

UNIT I CONSTRUCTION TECHNIQUES			
Structural systems - Load Bearing Structure - Framed Structure - Load transfer mechanism – floor system - Development of construction techniques - High rise Building Technology - Seismic effect - Environmental impact of materials – responsible sourcing - Eco Building (Green Building) - Material used - Construction methods - Natural Buildings - Passive buildings - Intelligent (Smart) buildings - Meaning - Building automation - Energy efficient buildings for various zones-Case studies of residential, office buildings and other buildings in each zones.			
PART A			
Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Define structural system.	BT-1	Remembering
2.	What are the types of buildings based on the Structural System	BT-1	Remembering
3.	Distinguish load bearing structure & framed structure.	BT-1	Remembering
4.	Sketch the pattern of load transfer mechanism.	BT-1	Remembering
5.	Outline floor system.	BT-1	Remembering
6.	Demonstrate the development of construction techniques.	BT-1	Remembering
7.	Compare the features implemented on high rise building technology.	BT-2	Understanding
8.	What is seismic effect?	BT-2	Understanding
9.	Prioritize the environmental impact of construction materials.	BT-2	Understanding
10.	Summarize the features of Eco building.	BT-2	Understanding
11.	List out any four construction materials used for constructing an eco-building.	BT-3	Applying
12.	Compose the characteristic features of construction materials.	BT-1	Remembering
13.	Give the limitations of natural buildings.	BT-1	Remembering
14.	Investigate intelligent buildings.	BT-1	Remembering
15.	What is an energy efficient building?	BT-2	Understanding
16.	Outline the major sources to be considered to make the building energy efficient.	BT-3	Applying
17.	Demonstrate about passive buildings.	BT-3	Applying
18.	List out the recent smart materials used in building construction.	BT-3	Applying
19.	List out the preventive measures that can be adopted for seismic effect.	BT-1	Remembering
20.	What are the 4 types of structural systems?	BT-1	Remembering
21.	What equipment is used in high-rise building construction?	BT-1	Remembering
22.	What is the latest building technology?	BT-1	Remembering

23.	How do building materials impact the environment?	BT-2	Understanding
24.	What is an example for building automation?	BT-1	Remembering
PART B			
1.	Explain structural system & its types in detail.	BT-3	Applying
2.	Summarize the characteristic features of load bearing structures & framed structure in detail.	BT-1	Remembering
3.	Give the stepwise procedure of load transfer mechanism, explain each in detail.	BT-2	Understanding
4.	Explain the features of High Rise Building technology.	BT-1	Remembering
5.	Illustrate in detail about the seismic effect on high rise building.	BT-2	Understanding
6.	Explain in detail about Limitation, benefits and requirements of Intelligent buildings?	BT-3	Applying
7.	“Eco building is an energy efficient building”. – Justify in detail.	BT-1	Remembering
8.	Explain about (i) Comparison of the materials to be used for green building. (8) (ii) The recycling methods adopted in an Eco building. (8)	BT-2	Understanding
9.	Explain the various construction methods in detail.	BT-2	Understanding
10.	Differentiate between natural buildings & passive buildings.	BT-2	Understanding
11.	Summarize the major features of various zones in India.	BT-1	Remembering
12.	Explain about Building Automation Systems.	BT-3	Applying
13.	Write a short note about smart building.	BT 3	Applying
14.	“Framed structure performs better than load bearing structure”, Justify.	BT-3	Applying
15.	Compose the limitations of latest Construction Techniques.	BT-2	Understanding
16.	Elaborate the role of materials and methods to achieve green building concepts.	BT-3	Applying
17.	Explain the modern methods of construction.	BT-1	Remembering
UNIT II CONSTRUCTION SEQUENCES			
<p>Specifications, details and sequence of activities and construction co-ordination – Site Clearance – Marking – Earthwork - masonry – stone masonry – Bond in masonry - concrete hollow block masonry – flooring – damp proof courses – construction joints – movement and expansion joints – pre cast pavements – Building foundations – basements – temporary shed – centering and shuttering – slip forms – scaffoldings – de-shuttering forms – Fabrication and erection of steel trusses – frames – weather and water proof – roof finishes.</p>			

PART-A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Define Specifications.	BT 1	Remembering
2.	Define Scaffolding?	BT 1	Remembering
3.	List the types of Masonry?	BT 1	Remembering
4.	What is Ashlar masonry?	BT 1	Remembering
5.	What are the advantages of using English bond?	BT 1	Remembering
6.	What are slipforms?	BT 1	Remembering
7.	Explain the term marking in construction	BT 2	Understanding
8.	Explain the steps involved in site clearance.	BT 2	Understanding
9.	What is dampness ?	BT 2	Understanding
10.	List the sequence of activities in construction	BT 3	Applying
11.	Identify any three materials used for joints.	BT 3	Applying
12.	Illustrate the classifications of stone masonry.	BT 3	Applying
13.	Differentiate English bond with Flemish bond.	BT 2	Understanding
14.	Examine about centering and shuttering.	BT 3	Applying
15.	Define and list out the different types of scaffolding.	BT 2	Understanding
16.	List the importance of providing DPC in buildings.	BT 3	Applying
17.	Compare expansion joint and construction joint.	BT 3	Applying
18.	Compose on braced domes.	BT 2	Understanding
19.	Discuss about functions of foundations?	BT 3	Applying
20.	What is the process of laying bricks?	BT 2	Understanding
21.	What is the process of laying foundation?	BT 3	Applying
22.	What's the difference between weather proof & waterproof?	BT 2	Understanding
23.	What is the Site clearance?	BT 2	Understanding
24.	What is meant by fire protection?	BT 1	Remembering

PART-B

1.	Define masonry. Briefly explain the types of stone masonry with neat sketch.	BT 4	Analyzing
2.	Name the different types of bonds in brick masonry and explain with neat sketches.	BT 3	Applying
3.	Explain about the general principles to be observed while laying DPC. And also write about the materials used for DPC and their properties.	BT 3	Applying
4.	List the fire protective requirement of the building.	BT 4	Analyzing
5.	What is Scaffolding? Mention its various components. Name the different types scaffolding and explain any two with neat sketches.	BT 3	Applying

6.	Plan the sequence of activities and the construction co- ordination in detail	BT 4	Analyzing
7.	Elaborate in detail about the Roof finishes.	BT 4	Analyzing
8.	Classify the types of flooring. Explain any 5 in detail with sketches.	BT 3	Applying
9.	Briefly explain with neat sketches about sequence of construction activities	BT 3	Applying
10.	Explain with neat sketch about the formwork of staircase.	BT 3	Applying
11.	Explain the following : (i) Pre cast pavements (6) (ii) temporary shed (5) (iii) Centering and shuttering (5)	BT 4	Analyzing
12.	Write Short notes English bond and Flemish bond.	BT 3	Applying
13.	Write a short note on Various types of shuttering.	BT 4	Analyzing
14.	Examine Building Foundation in detail.	BT 5	Evaluating
15.	Categorize the fabrication and erection of steel frames in detail.	BT 4	Analyzing
16.	Assess the process of shuttering and de-shuttering forms.	BT 4	Analyzing
17.	Summarize the construction methodology of RCC cooling tower using slip form techniques.	BT 5	Evaluating

UNIT III CONSTRUCTION OF SUB STRUCTURES

Techniques of Box jacking – Pipe Jacking -under water construction of diaphragm walls and basement-Tunneling techniques – Piling techniques - well and caisson - sinking cofferdam cable anchoring and grouting - driving diaphragm walls, sheet piles - shoring for deep cutting well points -Dewatering and stand by Plant equipment for underground open excavation.

PART A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What is the box jacking technique?	BT 1	Remembering
2.	What is the pipe jacking technique?	BT 1	Remembering
3.	List the applications of pipe jacking?	BT 1	Remembering
4.	Write about under reamed pile.	BT 1	Remembering
5.	What is well foundation?	BT 1	Remembering
6.	Define grouting.	BT 1	Remembering
7.	Explain the essential features of a pump to be used for dewatering.	BT 2	Understanding
8.	Explain the methods used for tunnel driving.	BT 2	Understanding
9.	What are the uses of sheet piles?	BT 2	Understanding
10.	Classify various methods to dewater deep excavations.	BT 2	Understanding
11.	Show the advantages of drift method.	BT 3	Applying
12.	List the different types of cofferdam.	BT 3	Applying

13.	Define Tunneling.	BT 2	Applying
14.	List out the advantages of box jacking and pipe jacking.	BT 1	Remembering
15.	List any four types of Piling Techniques?	BT 3	Applying
16.	List out the various methods of tunneling in soft soil.	BT 3	Applying
17.	When will you use a caisson?	BT 3	Applying
18.	How are diaphragm walls built underwater?	BT 1	Remembering
19.	Elaborate about cable anchoring.	BT 3	Applying
20.	What is the dewatering process?	BT 1	Remembering
21.	What are the benefits of diaphragm walls?	BT 2	Understanding
22.	What is cofferdam and its types?	BT 2	Understanding
23.	What is the method of diaphragm wall?	BT 2	Understanding
24.	What is well point method?	BT 2	Understanding
PART-B			
1.	Describe the procedure involved in underwater construction of diaphragm walls and basement.	BT 4	Analyzing
2.	What is a coffer dam? With the help of sketches explain the types of cofferdams.	BT 4	Analyzing
3.	Explain tunnel construction and its techniques.	BT 3	Applying
4.	Write about pneumatic caisson. Where is it adopted? How is it constructed?	BT 4	Analyzing
5.	Write a note on dewatering technique. Explain in detail about various dewatering methods.	BT 3	Applying
6.	Describe the various operations of pipe jacking under water construction of a bridge.	BT 4	Analyzing
7.	Describe the various methods adopted to construct a diaphragm wall.	BT 4	Analyzing
8.	Describe with neat sketch about the method of pile driving.	BT 3	Applying
9.	Explain in detail about box jacking technique.	BT 5	Evaluating
10.	Elaborate about Sinking Cofferdam with neat sketches.	BT 4	Analyzing
11.	What is well pointing and how does dewatering work?	BT 3	Applying
12.	Explain with sketches about well points.	BT 4	Analyzing
13.	Describe the various methods of underwater concreting operations system.	BT 4	Analyzing
14.	Explain the detailed description about various equipments used during driving well and caissons, sinking cofferdam and shoring for deep cutting.	BT 3	Applying
15.	Explain with sketches about Sheet piles.	BT 4	Analyzing
16.	Explain about (i) Grouting (ii) Cable anchoring	BT 3 (6) (7)	Applying

17.	What do you mean by shoring? Describe in brief various types of shores.	BT 4	Analyzing
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UNIT IV CONSTRUCTION OF SUPER STRUCTURES

Launching girders, bridge decks, off shore platforms – special forms for shells - techniques for heavy decks – in-situ pre-stressing in high rise structures, Material handling - erecting light weight components on tall structures - Support structure for heavy Equipment and conveyors Erection of articulated structures, braced domes and space decks.

PART – A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	What are bridge decks?	BT 1	Remembering
2.	Define the term support structure.	BT 1	Remembering
3.	Explain the term launching Girders.	BT 1	Remembering
4.	What are offshore platforms?	BT 1	Remembering
5.	Define articulated structures.	BT 1	Remembering
6.	Write about transmission tower.	BT 1	Remembering
7.	Summarize the advantages of articulated structures.	BT 2	Understanding
8.	Explain uses of silos.	BT 2	Understanding
9.	Illustrate the major techniques adopted for heavy decks.	BT 2	Understanding
10.	Summarize the precautions to be taken while erecting light weight components on tall structures.	BT 2	Understanding
11.	Draw a sketch of formwork for shells.	BT 3	Applying
12.	In which situations articulated structures can be adopted?	BT 3	Applying
13.	Classify types of offshore platforms.	BT 3	Applying
14.	List out the reasons for using special forms for shells.	BT 2	Understanding
15.	What do you mean by Cable stayed bridge?	BT 3	Applying
16.	Explain the term skyscrapers.	BT 2	Understanding
17.	Write the various operations involved in the construction of offshore platform.	BT 3	Applying
18.	Evaluate the reasons for using special forms of shells.	BT 3	Applying
19.	Compile the methods of prestressing.	BT 3	Applying
20.	List the purposes of plastering.	BT 2	Understanding

21.	Why damp proofing courses are provided?	BT 3	Applying
22.	What is a lateral load?	BT 2	Understanding
23.	List non-bearing walls. Explain any one.	BT 2	Understanding
24.	Explain about RCC beams.	BT 1	Remembering
PART – B			
1.	Explain the construction techniques for bridge decks with flowchart.	BT 4	Analyzing
2.	With flow diagram explain the erection of articulated towers.	BT 3	Applying
3.	Describe the construction of a typical belt conveyor installation What are the advantages of using belt conveyors for transporting materials?	BT 3	Applying
4.	Briefly explain General requirements for launching girders.	BT 4	Analyzing
5.	Explain in detail about special forms of shells.	BT 3	Applying
6.	Write short notes on Bow-string Bridge and cable-stayed bridge.	BT 3	Applying
7.	Describe the procedure involved in the erection of braced domes and space decks.	BT 4	Analyzing
8.	Explain about various types of domes with neat sketch.	BT 4	Analyzing
9.	Demonstrate the procedure for erecting light weight structures on tall buildings.	BT 4	Analyzing
10.	Compare the merits and demerits of various types of shells.	BT 3	Applying
11.	What is a sheet pile? List the factors for selection of sheet piles. Explain its types based on materials.	BT 3	Applying
12.	Explain about the support structures required for heavy equipments and conveyors.	BT 3	Applying
13.	Explain about (i) Skyscrapers and Transmission towers. (7) (ii) Material handling. (6)	BT 4	Analyzing
14.	Write short notes on Bridge decks.	BT 5	Evaluating
15.	Write short notes on Roof Shell Structure.	BT 3	Applying
16.	Explain in detail about Offshore platforms.	BT 4	Analyzing
17.	Explain the construction sequence of sky scraper in detail.	BT-5	Evaluate

UNIT V CONSTRUCTION EQUIPMENT

Selection of equipment for earth work - earth moving operations - types of earthwork equipment - tractors, motor graders, scrapers, front end loaders, earth movers – Equipment for foundation and pile driving. Equipment for compaction, batching, mixing and concreting - Equipment for material handling and erection of structures – types of cranes - Equipment for dredging, trenching, tunneling,

PART – A

Q.NO	QUESTIONS	BT LEVEL	COMPETENCE
1.	Define scrapers and explain how to calculate the output of scraper.	BT 1	Remembering
2.	Write the factors which influence the selection of equipments.	BT 1	Remembering
3.	List out various types of vibrators used in compaction process.	BT 1	Remembering
4.	Define dredging.	BT 1	Remembering
5.	List the equipments needed for compacting concrete.	BT 1	Remembering
6.	What is TBM? When it is used?	BT 1	Remembering
7.	Summarize the types of earthwork equipment.	BT 2	Understanding
8.	Explain the operations performed by motor grader.	BT 2	Understanding
9.	Summarize the need of equipment management in site.	BT 2	Understanding
10.	Describe the various types of conveyors.	BT 2	Understanding
11.	Classify the different methods of tunneling.	BT 3	Applying
12.	Demonstrate the operations performed by motor grader.	BT 3	Applying
13.	Explain the various operations involved in Graders.	BT 1	Remembering
14.	Point out factors influencing compaction.	BT 3	Applying
15.	Name the equipment used for volume batching in concrete production.	BT 3	Applying
16.	Name the equipments used for earth moving operations	BT 3	Applying
17.	Design the sequence of operations involved in driving the tunnel through rock.	BT 3	Applying
18.	Write about pile driving equipment.	BT 1	Remembering
19.	List any two reasons for dredging.	BT 3	Applying
20.	How many types of cranes are there?	BT 1	Remembering
21.	What is concrete batching equipment?	BT 2	Understanding
22.	What equipment is used for batching and mixing?	BT 2	Understanding
23.	What 4 functions must all material handling equipment perform?	BT 2	Understanding
24.	What are the types of manual handling equipment?	BT 2	Understanding

PART – B

1.	List out the different methods of dredging technique and explain with neat sketches.	BT 4	Analyzing
2.	Explain the various equipments for pile driving.	BT 4	Analyzing
3.	What are the various operations involved in road construction?	BT 3	Applying
4.	Examine various types of earthwork equipment. Describe in detail about any two earthwork equipment and mention their uses.	BT 4	Analyzing

5.	Discuss the role of tractors in earth moving.	BT 3	Applying
6.	With a neat sketch explain the typical batching plant.	BT 4	Analyzing
7.	Explain the various operations involved in multipurpose excavators with neat sketch.	BT 4	Analyzing
8.	Distinguish between crawler & pneumatic type of wheel excavators.	BT 3	Applying
9.	Illustrate the various factors involved in selection of equipment for earthwork.	BT 5	Evaluating
10.	What are the different types of cranes? Explain any three in detail.	BT 4	Analyzing
11.	Briefly explain about types of Dredger mention below with neat sketch. (i) Dipper Dredger (4) (ii) Bucket Dredger (5) (iii) Wheel Dredger (4)	BT 3	Applying
12.	Analyze the equipment used for erection of structures in detail.	BT 4	Analyzing
13.	Explain the various aspects of graders and scrapers in detail.	BT 4	Analyzing
14.	Explain in detail about trenching and the equipment used for trenching.	BT 3	Applying
15.	List out the equipments used for concreting work.	BT 4	Analyzing
16.	Discuss the advantages of Elevating Scraper.	BT 3	Applying
17.	Explain in detail the various equipments used for compaction, batching and mixing of concrete.	BT 5	Evaluating