

SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur– 603203

DEPARTMENT OF MECHANICAL ENGINEERING

QUESTION BANK



II SEMESTER

PIS 203–SAFETY IN CONSTRUCTION

M.E. INDUSTRIAL SAFETY ENGINEERING

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QUESTION BANK

SUBJECT: PIS 203 - SAFETY IN CONSTRUCTION

SEM / YEAR: II/I

UNIT I - ACCIDENTS CAUSES AND MANAGEMENT SYSTEMS

Problems impeding safety in construction industry- causes of fatal accidents, types and causes of accidents related to various construction activities, human factors associated with these accident – construction regulations, contractual clauses – Pre contract activates, preconstruction meeting - design aids for safe construction – permits to work – quality assurance in construction - compensation – Recording of accidents and safety measures – Education and training

PART – A

Q.No	Questions	BT Level	Competence
1.	Define the term Fatal Accident.	BT-1	Remembering
2.	What is HIRA?	BT-1	Remembering
3.	What are the problems in safety in construction industry?	BT-1	Remembering
4.	What are the causes of fatal accidents.	BT-1	Remembering
5.	Show the need of safe work permits.	BT-1	Remembering
6.	List the process of HIRA.	BT-1	Remembering
7.	Illustrate about the Hierarchy of controls.	BT-2	Understanding
8.	Why accident is more frequent in construction in construction industry?	BT-2	Understanding
9.	Summarize the forms of safe work permit.	BT-2	Understanding
10.	Summarize the activities carried out in construction site.	BT-2	Understanding
11.	Write the human factors associated with accident in construction industry.	BT-3	Applying
12.	List the types of health and safety hazards on construction site.	BT-1	Remembering
13.	Organize the design aids for safe construction	BT-1	Remembering
14.	What is Risk Assessment matrix?	BT-1	Remembering
15.	List the factors affecting probability of accidents.	BT-2	Understanding
16.	Write about the function of quality assurance in construction.	BT-2	Understanding
17.	Estimate the need of Education and Training in accident management.	BT-3	Applying
18.	How will you measure the record accidents?	BT-3	Applying
19.	What is Fault tree analysis?	BT-3	Applying
20.	Elaborate about hazards in safe work permit.	BT-1	Remembering
21.	List the Construction hazards.	BT-1	Remembering
22.	List the hazards in demolition work.	BT-1	Remembering
23.	What are the hazards associated with excavations?	BT-1	Remembering
24.	What are all the protections required against fall from work at height?	BT-2	Understanding
25.	Explain about failure mode and effect analysis?	BT-1	Remembering

PART - B

1.	Briefly explain the problems impeding safety in construction industry.	BT-3	Applying
2.	Write a short note on i. Pre Contract Activities ii. Pre Construction Meeting.	BT-1	Remembering
3.	What are the safety aspects to be considered while planning construction activities?	BT-2	Understanding
4.	Explain the types of Permit to work..	BT-1	Remembering
5.	Illustrate the procedure of PTW in detail.	BT-2	Understanding
6.	Summarize about the various human factors that are impediments to safety in construction.	BT-3	Applying
7.	Write a short note on i. Permit Issuer ii. Permit Acceptor. iii. Permit Holder.	BT-3	Applying
8.	List in detail about the responsibilities of Area Authority and Issuing Authority	BT-1	Remembering
9.	List the Problems in construction in detail.	BT-2	Understanding
10.	Discuss about Construction Safety Management.	BT-2	Understanding
11.	Examine the accident causing factors.	BT-2	Understanding
12.	Why do we investigate accidents and explain the safety measures to be carried out?	BT-2	Understanding
13.	Discuss about quality assurance in construction.	BT-1	Remembering
14.	Elaborate about the education and training schemes to be adapted to person in construction industry.	BT-3	Applying
15.	Explain in detail about Construction hazards.	BT-1	Remembering
16.	Explain in detail about process of HIRA.	BT-1	Remembering
17.	What is Construction quality control process? Explain quality control and quality Assurance.	BT 3	Applying

UNIT II - HAZARDS OF CONSTRUCTION AND PREVENTION

Excavations, basement and wide excavation, trenches, shafts – scaffolding, types, causes of accidents, scaffold inspection checklist – false work – erection of structural frame work, dismantling – tunneling – blasting, pre blast and post blast inspection – confined spaces – working on contaminated sites – work over water - road works – power plant constructions – construction of high rise buildings.

PART – A

Q.No	Questions	BT Level	Competence
1.	List any four checklist in excavation.	BT 1	Remembering
2.	Write the methods of steel work erection.	BT 1	Remembering
3.	Define the term competent person.	BT 1	Remembering

4.	What is meant by tunneling?	BT 1	Remembering
5.	Write the uses of scaffolding.	BT 1	Remembering
6.	Name the various components of scaffolding.	BT 1	Remembering
7.	Explain about confined space.	BT 2	Understanding
8.	State any four safety arrangements in work over water.	BT 2	Understanding
9.	Demonstrate about false work.	BT 2	Understanding
10.	How safety in contaminated sites assured?	BT 2	Understanding
11.	Identify any two safety measures in road work construction.	BT 3	Applying
12.	Define blasting.	BT 3	Applying
13.	List the steps in pre blasting.	BT 3	Applying
14.	Enlist the need of Scaffolding.	BT 2	Understanding
15.	What are the steps in post blast inspection.	BT 3	Applying
16.	List the different types of tunneling.	BT 2	Understanding
17.	Enumerate safety in construction of Power plants.	BT 3	Applying
18.	State the Rescue and Emergency Arrangements in work over water.	BT 3	Applying
19.	Estimate the different types of scaffolding.	BT 2	Understanding
20.	Elaborate about high rise building.	BT 3	Applying
21.	What is false work.	BT 2	Understanding
22.	Difference between false work and forms.	BT 3	Applying
23.	What is shoring?	BT 2	Understanding
24.	What is excavation and trench?	BT 2	Understanding
25.	List the excavation requirements in construction.	BT 1	Remembering

PART- B

1.	What are the precautions to be taken during excavation?	BT 4	Analyzing
2.	Prepare a checklist to ensure safety in excavation of trench.	BT 3	Applying
3.	What are the safety precautions in work in confined spaces?	BT 3	Applying
4.	What are the safety precautions to be considered while making scaffolding?	BT 4	Analyzing
5.	Summarize about different types of tunneling.	BT 3	Applying
6.	Illustrate how false work carried out in construction.	BT 3	Applying
7.	Prepare a checklist to ensure safety in scaffold inspection.	BT 4	Analyzing
8.	Describe the different types of Scaffolding.	BT 4	Analyzing
9.	Identify the hazards associated with confined spaces.	BT 4	Analyzing
10.	Explain about pre blast and post blast inspection.	BT 3	Applying
11.	Explain the types of false work and the causes of false work failure.	BT 3	Applying
12.	List the sequences of post blast inspection.	BT 3	Applying
13.	Enlist the safety measures to adopt while doing road work construction.	BT 4	Analyzing
14.	Discuss the safety measures while doing construction work in high rise building.	BT 5	Evaluating
15.	Explain in detail about the excavation requirements in construction Industry.	BT 3	Applying
16.	Explain different methods for erection of steel bridges.	BT 4	Analyzing
17.	Discuss the protection methods during blasting.	BT 4	Analyzing

UNIT III -WORKING AT HEIGHTS

Fall protection in construction OSHA 3146 – OSHA requirement for working at heights, Safe access and egress – safe use of ladders- Scaffoldings , requirement for safe work platforms, stairways, gangways and ramps – fall prevention and fall protection, safety belts, safety nets, fall arrestors, controlled access zones, safety monitoring systems – working on fragile roofs, work permit systems, height pass – accident case studies.

PART – A

Q.No	Questions	BT Level	Competence
1.	What is a 'risk assessment'?	BT 1	Remembering
2.	What is the definition of working platform?	BT 1	Remembering
3.	Define free fall.	BT 1	Remembering
4.	What is meant by harness and lanyards?	BT 1	Remembering
5.	What are Employers' Responsibilities to provide Fall Protection?	BT 1	Remembering
6.	What is meant by controlled accesses zone?	BT 2	Understanding
7.	Outline the need of fall protection.	BT 2	Understanding
8.	Show any two requirement of working at heights.	BT 2	Understanding
9.	Illustrate the options for securing ladders.	BT 2	Understanding
10.	What is safety net?	BT 3	Applying
11.	Suggest any two points on safe use of ladder.	BT 3	Applying
12.	What about the place of work where the ladder will be used?	BT 2	Applying
13.	Differentiate stairway and gang way.	BT 1	Remembering
14.	List the uses of fall arrester.	BT 3	Applying
15.	Analyze about working at heights	BT 3	Applying
16.	Examine about gangway.	BT 3	Applying
17.	Enlist the need of safety belt.	BT 3	Applying
18.	What do you infer from height pass test?	BT 1	Remembering
19.	Discuss about anchor point in safety nets.	BT 3	Applying
20.	Elaborate the need of stairways.	BT 1	Remembering
21.	List the common cause of ladder accidents.	BT 2	Understanding
22.	What are the types of ladder?	BT 2	Understanding
23.	What is meant by three point contact in ladder?	BT 2	Understanding
24.	What is meant by fall protection system?	BT 2	Understanding
25.	Explain about personal fall arrest system.	BT 1	Remembering

PART - B

1.	Write in detail about i. Control Access zone ii. Guard Rail System	BT 4	Analyzing
2.	Explain about fall protection system as per OSHA standard.	BT 4	Analyzing
3.	What are the requirements for working at heights as per OSHA?	BT 3	Applying
4.	State the safe use of ladder in detail.	BT 4	Analyzing
5.	Is it necessary to inspect working platforms? Justify your answer.	BT 3	Applying
6.	Demonstrate in detail about personal fall arrest system in detail.	BT 4	Analyzing
7.	What do you need to consider when selecting equipment for Working at height?	BT 4	Analyzing
8.	Explain about the following	BT 3	Applying

	i. Safety belts ii. Safety nets		
9.	Explain in detail about i. Stairways ii. Gangways iii. Ramps	BT 5	Evaluating
10.	Suggest some guidelines in selection of industrial safety belts and their anchorage system	BT 4	Analyzing
11.	i. Write about safety net classification. ii. Explain about size of safety nets and safety net labels.	BT 3	Applying
12.	Examine about working on fragile roofs.	BT 4	Analyzing
13.	i. What is the importance of height pass test? ii. Write about work permit system.	BT 4	Analyzing
14.	Explain the common cause of ladder accidents.	BT 3	Applying
15.	Explain the anatomy of fall and philosophies of fall protection.	BT 4	Analyzing
16.	Explain the common cause of ladder accidents. List the safety precaution followed to prevent ladder accidents.	BT 3	Applying
17.	Discuss the guidelines for using ladders and list some of the ladder maintenance.	BT 4	Analyzing

UNIT IV -CONSTRUCTION MACHINERY

Selection, operation, inspection and testing of hoisting cranes, mobile cranes, tower cranes, crane inspection checklist - builder's hoist, winches, chain pulley blocks – use of conveyors - concrete mixers, concrete vibrators – safety in earth moving equipment, excavators, dozers, loaders, dumpers, motor grader, concrete pumps, welding machines, use of portable electrical tools, drills, grinding tools, manual handling scaffolding, hoisting cranes – use of conveyors and mobile cranes – manual handling.

PART – A

Q.No	Questions	BT Level	Competence
1.	State the uses of conveyors.	BT 1	Remembering
2.	List out the vehicles used in construction.	BT 1	Remembering
3.	What is maximum free standing height?	BT 1	Remembering
4.	What are the Precautions to be taken in fitting the slings in tower cranes?	BT 1	Remembering
5.	What is the factor influences the selection of construction equipment?	BT 1	Remembering
6.	What is builder hoist?	BT 1	Remembering
7.	What is meant by winches?	BT 2	Understanding
8.	Illustrate the different types of concrete mixer.	BT 2	Understanding
9.	Write the uses of dump truck.	BT 2	Understanding
10.	State the functions of chain pulley block.	BT 2	Understanding
11.	Identify the need of welding type's machine.	BT 3	Applying
12.	What is heavy moving earth equipment?	BT 3	Applying
13.	Write the functions of conveyors.	BT 3	Applying
14.	Examine how mortar grade used?	BT 2	Understanding
15.	List the different types of winches.	BT 3	Applying
16.	List the different types of conveyors.	BT 2	Understanding
17.	Enlist the factor influences the efficiency of concrete mixer.	BT 3	Applying
18.	What are dumpers used for?	BT 3	Applying

19.	Discuss about bull dozer.	BT 2	Understanding
20.	Compose the purposes of concrete pumps.	BT 3	Applying
21.	What is Pump concrete?	BT 2	Understanding
22.	Classify the type of excavators?	BT 3	Applying
23.	What is meant by grinding tools?	BT 2	Understanding
24.	What are dozers used for?	BT 2	Understanding
25.	What is meant by loaders?	BT 1	Remembering

PART - B

1.	Briefly explain the tower cranes	BT 4	Analyzing
2.	Describe about monthly inspection and maintenance of tower cranes.	BT 3	Applying
3.	Prepare a checklist for tower crane inspection.	BT 3	Applying
4.	Write the technical note on i. Motor Grader. ii. Concrete Mixers.	BT 4	Analyzing
5.	Prepare a checklist for mobile crane inspection.	BT 3	Applying
6.	Explain the different types of construction equipment.	BT 3	Applying
7.	Briefly explain the safety measures to be adopted while using construction machineries.	BT 4	Analyzing
8.	Explain the different types of winches.	BT 4	Analyzing
9.	What is dump truck and explain its function with example?	BT 4	Analyzing
10.	Enumerate the safety in operation of loaders.	BT 3	Applying
11.	Suggest the safety Tips For Bulldozer Operation.	BT 3	Applying
12.	Classify the different types of concrete vibrators and explain in detail.	BT 3	Applying
13.	Evaluate the need of concrete mixer and its types.	BT 4	Analyzing
14.	Outline the functions of conveyors and explain its types.	BT 5	Evaluating
15.	Explain in detail the factor influences the selection of construction equipment?	BT 3	Applying
16.	Explain the operations carried by motor grader and the loader in detail.	BT 4	Analyzing
17.	Explain the maintenance and care of conveyor system.	BT 4	Analyzing

UNIT V -SAFETY IN DEMOLITION WORK

Safety in demolition work, manual, mechanical, using explosive - keys to safe demolition, pre survey inspection, method statement, site supervision, safe clearance zone, health hazards from demolition-Indian standard - trusses, girders and beams – first aid – fire hazards and preventing methods – interesting experiences at the construction site against the fire accidents.

PART – A

Q.No	Questions	BT Level	Competence
1.	Why demolition is required?	BT 1	Remembering
2.	Point out the hazards during demolition.	BT 1	Remembering
3.	What are the issues associated with demolition?	BT 1	Remembering
4.	What are the first aid requirements for site?	BT 1	Remembering
5.	List the health hazards with demolition activities.	BT 1	Remembering
6.	Write the importance of pre survey inspection for safety in demolition activities.	BT 1	Remembering
7.	Identify the need of safe clearance zone in demolition work.	BT 2	Understanding
8.	Outline the process to demolish a house.	BT 2	Understanding

9.	What is a demolition plan?	BT 2	Understanding
10.	Which is a first aider?	BT 2	Understanding
11.	Choose the first aid requirements for sites.	BT 3	Applying
12.	What are the manual demolition technique?	BT 3	Applying
13.	Select the different types of beams.	BT 2	Applying
14.	Differentiate between repair and rehabilitation.	BT 1	Remembering
15.	Classify any four mechanical demolition technique.	BT 3	Applying
16.	Classify the different demolition technique	BT 3	Applying
17.	Choose some Indian standard code regarding safety and demolition.	BT 3	Applying
18.	Select some explosives to demolish a building.	BT 3	Applying
19.	List out the construction regulation for construction and demolition	BT 1	Remembering
20.	How many first aiders need on the sites?	BT 3	Applying
21.	List the various health hazards in demolition.	BT 1	Remembering
22.	Summarize the sequence of demolition of building.	BT 2	Understanding
23.	What are the survey to be done before demolition?	BT 2	Understanding
24.	List the factors affecting selection of demolition work.	BT 2	Understanding
25.	Summarize the advantage and disadvantages of Ball and crane method.	BT 2	Understanding

PART-B

1.	Discuss about safety in demolition work.	BT 4	Analyzing
2.	Explain pre survey inspection for safety in demolition methods.	BT 4	Analyzing
3.	Briefly explain about health hazards arising from demolition work using explosives.	BT 3	Applying
4.	Explain the salient features to be considered in demolition works.	BT 4	Analyzing
5.	Explain the different types of demolition work.	BT 3	Applying
6.	Show the pre survey inspection checklist for demolition work.	BT 4	Analyzing
7.	Outline a brief technical note on non-explosive demolition method.	BT 4	Analyzing
8.	Organize a checklist for launching girders for risk engineers.	BT 3	Applying
9.	Briefly explain the measures to assess fire safety.	BT 5	Evaluating
10.	Identify the general safety requirements for machine tools and their operation as per IS 11016	BT 4	Analyzing
11.	Examine about fire preventing measures in construction site.	BT 3	Applying
12.	List measures on workplace safety and explain in detail.	BT 4	Analyzing
13.	Explain the following i. First Aid in construction site. ii. Fire Hazards in site	BT 4	Analyzing
14.	Develop the sequences of explosive demolition method technique.	BT 3	Applying
15.	Explain about the factors affecting the selection of demolition method.	BT 4	Analyzing
16.	Explain in detail the various health hazards in the demolition work?	BT 3	Applying
17.	Explain in detail about the safe clear zone?	BT 4	Analyzing

