

# **SRM VALLIAMMAI ENGINEERING COLLEGE**

SRM Nagar, Kattankulathur – 603 203

## **DEPARTMENT OF MECHANICAL ENGINEERING**

### **QUESTION BANK**



#### **II SEMESTER**

**1914207–SAFETY IN CONSTRUCTION.**

**M.E INDUSTRIAL SAFETY ENGINEERING.**

**Regulation – 2019**

**Academic Year 2019 – 20**

*Prepared by*

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DEPARTMENT OF MECHANICAL ENGINEERING

## QUESTION BANK

SUBJECT: 1914207-SAFETY IN CONSTRUCTION

SEM / YEAR: III/I

### UNIT I - ACCIDENTS CAUSES AND MANagementsYSTEMS

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	Remember
2.	Where the sparkers used in construction site?	BT-1	Remember
3.	What are the problems in safety in construction industry?	BT-1	Remember
4.	Recall the causes of fatal accidents.	BT-1	Remember
5.	Show the need of safe work permits.	BT-1	Remember
6.	State Hot work Permit.	BT-1	Remember
7.	Illustrate the contents to available in accident report.	BT-2	Understand
8.	Why accident is more frequent in construction in construction industry?	BT-2	Understand
9.	Summarize the forms of safe work permit.	BT-2	Understand
10.	Classify the common contract clauses.	BT-2	Understand
11.	Write the human factors associated with accident in construction industry.	BT-3	Apply
12.	Identify some education policy in construction industry.	BT-3	Apply
13.	Organize the design aids for safe construction	BT-3	Apply
14.	Examine contract Clause.	BT-4	Analyze
15.	List the types of accident in construction sector.	BT-4	Analyze

16.	Write about the function of quality assurance in construction.	BT-4	Analyze
17.	Estimate the need of Education and Training in accident management.	BT-5	Evaluate
18.	How will you measure the record accidents?	BT-5	Evaluate
19.	Mention the two points of compensation for accident in construction industry.	BT-6	Create
20.	Elaborate about hazards in safe work permit.	BT-6	Create

### **PART - B**

1.	Briefly explain the problems impeding safety in construction industry.	BT-1	Remember
2.	Write a short note on (i) Pre Contract Activities (ii) Pre Construction Meeting.	BT-1	Remember
3.	What are the safety aspects to be considered while planning construction activities?	BT-1	Remember
4.	Explain the objectives of safe work permits.	BT-1	Remember
5.	What are the aspects with respect to safety in organizational set up of construction industry?	BT-2	Understand
6.	Summarize about the various human factors that are impediments to safety in construction.	BT-2	Understand
7.	Write a short note on (i) Quality assurance in construction. (ii) Compensation for accident in construction industry.	BT-2	Understand
8.	Develop a hint note on contract clause in construction.	BT-3	Application
9.	List the Problems in construction in detail.	BT-3	Application
10.	(i) Benefits of accident investigation (ii) Safety measures in construction industries.	BT-3	Application
11.	Examine the accident causing factors.	BT-4	Analyse
12.	Why do we investigate accidents and explain the safety measures to be carried out?	BT-4	Analyse
13.	Estimate the types and causes of accidents in construction	BT-5	Evaluate

	industry.		
14.	Elaborate about the education and training schemes to be adapted to person in construction industry.	BT-6	Create

### PART - C

1.	Briefly explain the safety measures to be carried out in construction industry	BT-1	Remember
2.	Why Safety Committees are required in construction sites? Explain the advantages of Safety Committees.	BT-2	Understand
3.	Analyze the improvement processes to justify the quality of accident investigations.	BT-4	Analyse
4.	Prepare a case study and detailed report on causes of accident and remedies to be adopted.	BT-6	Create

### 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	Remember
2.	Write the methods of steel work erection.	BT-1	Remember
3.	Define the term competent person.	BT-1	Remember
4.	What is meant by tunneling?	BT-1	Remember
5.	Write the uses of scaffolding.	BT-1	Remember
6.	Name the various parts of scaffolding.	BT-1	Remember
7.	Explain about confined space.	BT-2	Understand
8.	State any four safety arrangements in work over water.	BT-2	Understand
9.	Demonstrate about false work.	BT-2	Understand
10.	How safety in contaminated sites assured?	BT-2	Understand

11.	Identify any two safety measures in road work construction.	BT-3	Apply
12.	State blasting.	BT-3	Apply
13.	Select the steps in pre blasting.	BT-3	Apply
14.	Enlist the need of Scaffolding.	BT-4	Analyze
15.	Categorize the post blast inspection.	BT-4	Analyze
16.	List the different types of tunneling.	BT-4	Analyze
17.	Enumerate safety in construction of Power plants.	BT-5	Evaluate
18.	State the Rescue and Emergency Arrangements in work over water.	BT-5	Evaluate
19.	Estimate the different types of scaffolding.	BT-6	Create
20.	Elaborate about high rise building.	BT-6	Create

**PART- B**

1.	What are the precautions to be taken during excavation?	BT-1	Remember
2.	Prepare a checklist to ensure safety in excavation of trench.	BT-1	Remember
3.	What are the safety precautions in work in confined spaces?	BT-1	Remember
4.	What are the safety precautions to be considered while making scaffolding?	BT-1	Remember
5.	Summarize about different types of tunneling.	BT-2	Understand
6.	Illustrate how false work carried out in construction.	BT-2	Understand
7.	Prepare a checklist to ensure safety in scaffold inspection	BT-2	Understand
8.	Describe the different types of Scaffolding.	BT-3	Application
9.	Identify the hazards associated with confined spaces.	BT-3	Application
10.	Explain about pre blast and post blast inspection.	BT-3	Application
11.	Outline the Safety in the erection, use and dismantling of Scaffolds of power plants.	BT-4	Analyse
12.	List the sequences of post blast inspection.	BT-4	Analyse
13.	Enlist the safety measures to adopt while doing road work construction.	BT-5	Evaluate
14.	Discuss the safety measures while doing construction work in high rise building.	BT-6	Create

### PART - C

1.	Explain the different parts of scaffolding.	BT-3	Application
2.	Illustrate the safety works carried in thermal power plants as per NTPC	BT-2	Evaluate
3.	Outline the different Acts and Regulation in safety of working.	BT-1	Remember
4.	Describe the detail processes of erection of steel frame work.	BT-5	Evaluate

### 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	Remember
2.	What is the definition of working platform?	BT-1	Remember
3.	Define free fall.	BT-1	Remember
4.	What is Subpart M?	BT-1	Remember
5.	What are Employers' Responsibilities to provide Fall Protection?	BT-1	Remember
6.	What is meant by controlled accesses zone?	BT-1	Remember
7.	Outline the need of fall protection.	BT-2	Understand
8.	Show any two requirement of working at heights.	BT-2	Understand
9.	Illustrate the options for securing ladders.	BT-2	Understand
10.	What is safety net?	BT-2	Understand
11.	Suggest any two points on safe use of ladder.	BT-3	Apply
12.	What about the place of work where the ladder will be used?	BT-3	Apply
13.	Differentiate stairway and gang way.	BT-3	Apply
14.	List the uses of fall arrester.	BT-4	Analyze
15.	Analyze about working at heights	BT-4	Analyze

16.	Examine about gangway.	BT-4	Analyze
17.	Enlist the need of safety belt.	BT-5	Evaluate
18.	What do you infer from height pass test?	BT-5	Evaluate
19.	Discuss about anchor point in safety nets.	BT-6	Create
20.	Elaborate the need of stairways.	BT-6	Create

### **PART - B**

1.	Write in detail about (i) Control Access zone (ii) Guard Rail System	BT-1	Remember
2.	Explain about fall protection system as per OSHA standard.	BT-1	Remember
3.	What are the requirements for working at heights as per OSHA?	BT-1	Remember
4.	State the safe use of ladder in detail.	BT-1	Remember
5.	Is it necessary to inspect working platforms? Justify your answer.	BT-2	Understand
6.	Demonstrate in detail about classification of safety belts.	BT-2	Understand
7.	What do you need to consider when selecting equipment for working at height?	BT-2	Understand
8.	Explain about the following (i) Safety belts (ii) Safety nets	BT-3	Application
9.	Explain in detail about (i) Stairways (ii) Gangways (iii) Ramps	BT-3	Application
10.	Suggest some guidelines in selection of industrial safety belts and their anchorage system	BT-3	Application
11.	(i) Write about safety net classification. (ii) Explain about size of safety nets and safety net labels.	BT-4	Analyse
12.	Examine about working on fragile roofs.	BT-4	Analyse
13.	(i) What is the importance of height pass test?	BT-5	Evaluate

	(ii) Write about work permit system.		
14.	Prepare a case study and report on working at heights and fall protection system.	BT-6	Create

**PART - C**

1.	List the safety tips in working at heights.	BT-4	Analyse
2.	What do You need to consider if you are doing a risk assessment? Justify your comments.	BT-2	Understand
3.	Explain the different sources of safety measures in working at heights.	BT-1	Remember
4.	Formulate the hazards in working at heights and suggest remedies on construction.	BT-6	Create

**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**

<b>Q.No</b>	<b>Questions</b>	<b>BT Level</b>	<b>Competence</b>
1.	State the uses of conveyors.	BT-1	Remember
2.	List out the vehicles used in construction.	BT-1	Remember
3.	What is maximum free standing height?	BT-1	Remember
4.	What are the Precautions to be taken in fitting the slings in tower cranes?	BT-1	Remember
5.	What is the factor influences the selection of construction equipment?	BT-1	Remember
6.	What is builder hoist?	BT-1	Remember
7.	What is meant by winches?	BT-2	Understand



8.	Illustrate the different types of concrete mixer.	BT-2	Understand
9.	Write the uses of dump truck.	BT-2	Understand
10.	State the functions of chain pulley block.	BT-2	Understand
11.	Identify the need of welding type's machine.	BT-3	Apply
12.	What is heavy moving earth equipment?	BT-3	Apply
13.	Write the functions of conveyors.	BT-3	Apply
14.	Examine how mortar grade used?	BT-4	Analyze
15.	List the different types of winches.	BT-4	Analyze
16.	List the different types of conveyors.	BT-4	Analyze
17.	Enlist the factor influences the efficiency of concrete mixer.	BT-5	Evaluate
18.	What are dumpers used for?	BT-5	Evaluate
19.	Discuss about bull dozer.	BT-6	Create
20.	Compose the purposes of concrete pumps.	BT-6	Create

**PART - B**

1.	Briefly explain the tower cranes	BT-1	Remember
2.	Describe about monthly inspection and maintenance of tower cranes.	BT-1	Remember
3.	Prepare a checklist for tower crane inspection.	BT-1	Remember
4.	Write the technical note on (i) Motor Grade. (ii) Welding Machines.	BT-1	Remember
5.	Prepare a checklist for mobile crane inspection.	BT-2	Understand
6.	Explain the different types of construction equipment.	BT-2	Understand
7.	Briefly explain the safety measures to be adopted while using construction machineries.	BT-2	Understand
8.	Explain the different types of winches.	BT-3	Application
9.	What is dump truck and explain it function with example?	BT-3	Application
10.	Enumerate the safety in operation of loaders.	BT-3	Application
11.	Suggest the safety Tips For Bulldozer Operation.	BT-4	Analyse
12.	Classify the different types of concrete vibrators and explain in detail.	BT-4	Analyse
13.	Evaluate the need of concrete mixer and its types.	BT-5	Evaluate
14.	Outline the functions of conveyors and explain its types.	BT-6	Create

**PART - C**

1.	Enlist the Risk Assessment for Erection, Dismantling and Height Alteration Operations of Tower Crane	BT-4	Analyse
2.	Explain the maintenance and care of conveyor system.	BT-2	Understand
3.	Suggest the safety measures in handling earth moving equipment	BT-1	Remember
4.	State excavator safety tips for before, during, and after operation	BT-6	Create

**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	Remember
2.	Point out the hazards during demolition.	BT-1	Remember
3.	What are the issues associated with demolition?	BT-1	Remember
4.	What are the first aid requirements for site?	BT-1	Remember
5.	List the health hazards with demolition activities.	BT-1	Remember
6.	Write the importance of pre survey inspection for safety in demolition activities.	BT-1	Remember
7.	Identify the need of safe clearance zone in demolition work.	BT-2	Understand
8.	Outline the process to demolish a house.	BT-2	Understand
9.	What is a demolition plan?	BT-2	Understand
10.	Which is a first aider?	BT-2	Understand
11.	Choose the first aid requirements for sites.	BT-3	Apply
12.	What are the manual demolition technique?	BT-3	Apply
13.	Select the different types of beams.	BT-3	Apply
14.	Differentiate between repair and rehabilitation.	BT-4	Analyze

15.	Classify any four mechanical demolition technique.	BT-4	Analyze
16.	Classify the different demolition technique	BT-4	Analyze
17.	Choose some Indian standard code regarding safety and demolition.	BT-5	Evaluate
18.	Select some explosives to demolish a building.	BT-5	Evaluate
19.	List out the construction regulation for construction and demolition	BT-6	Create
20.	How many first aiders need on the sites?	BT-6	Create

### **PART-B**

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

	technique.		
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**PART - C**

1.	Explain the key features to be considered for safe demolition work	BT-1	Remember
2.	Write about any two recent incidents and their causes in construction site and also preventing measures which should have been taken for safety.	BT-6	Create
3.	How do you demolish the old concrete chimney of a power plant using explosives?	BT-4	Remember
4.	Illustrate a questionnaire survey on first aid treatment processes.	BT-2	Understand



