CENTRAL BHARAT SEVAK SAMAJ

NATIONAL DEVELOPMENT AGENCY, ESTABLISHED IN 1952 BY PLANNING COMMISSION, GOVT. OF INDIA

CENTRAL BOARD OF EXAMINATIONS

BSS NATIONAL VOCATIONAL EDUCATION MISSION

FSS040-ADVANCED DIPLOMA IN INDUSTRIAL SAFETY

ONE YEAR EXAMINATION NOVEMBER-2025

FSS040-01 INDUSTRIAL SAFETY ENGINEERING & MANAGEMENT

TIME: 3 Hours **Marks: 100**

INSTRUCTIONS

* 43 questions are there in total
* Write answers to each question in proportion to the mark allotted
* During the first 15 minutes read the questions carefully

I. FILL IN THE BLANKS - ANSWER FOR ANY 10 QUESTIONS **1 x 10 = 10**

1) _____ will request collaborators to assist and cooperate with the implementation of the matters in item 8 above.
2) The shipping industry, steel industry, and chemical industry and the like have a large number of _____ within their own premises
3) _____ is an unplanned and undesired incident which may cause injury or property damage.
4) Working on the machine by making safety device non-operative is an _____
5) Secure harmful energy sources to prevent injury, we must do _____
6) _____ act establishes responsibilities and rights for employers and employees
7) Probability of the event that might occur X Severity of the event if it occurs _____
8) Tool _____ talk.
9) There are _____ types of work permit.
10) Safety training gives employees opportunity to identify hazards and the best practices to avoid such hazards at _____
11) _____ such as tinted shields be used to protect operators from burns and ultra-violet light exposure.
12) _____ is a specialized job involved a lot of hazards which often lead to accidents.
13) Safety is no longer just the following of _____ regulations
14) Chemicals can be _____ into hazard classes and exhibit both physical and health hazards.
15) Hazard identification is a part of _____ in which the hazards are identified for further investigation

II. DEFINE THE FOLLOWING - ANSWER FOR ANY 10 QUESTIONS **2 x 10 = 20**

1) Define The Matters To Be Implemented By Implementing Agencies
2) What is the Current Status of Industrial Accidents?
3) How an Electronic Eye works?
4) What is Material Handling?
5) Write any of the six unsafe conditions of Industrial accidents?
6) What is the need for emergency planning?
7) What are the safety factors in the use of hand trucks?
8) What is Risk?
9) What is permit?
10) What is condition monitoring?
11) Expand LPG, LNG and CNG?
12) Explain heat treatment operations?
13) Define radiography?
14) Give the structure of Safety Committee?
15) Matters to Be Implemented by Promoters and Supporters?

III. WRITE BRIEF ANSWER FOR ANY 5 QUESTIONS **5 x 5 = 25**

1) Explain about Establishment of Appropriate Working Methods
2) What are the precaution to be taken by Authorized person while entering to confined space?
3) Write about safety tag system?
4) What is work permit system and vessel entry permit?
5) Explain a. Industrial hygiene b. Advantages and disadvantages of housekeeping?
6) Give the cause of accidents?
7) Explain Hazardous industry?
8) How equipment life cycle is useful for deciding maintenance activities? Explain in detail?

IV. WRITE LONG ANSWER FOR ANY 3 QUESTIONS **15 x 3 = 45**

1) Describe about Trends in Industrial Accidents Caused by Machinery and Equipment?
2) Write Short notes on: A) Electrical Hazards B) Explosive Welding C) Safety precautions to be taken in Brazing
3) Write the different types of hazards present in the working place and what are the PPE is used for it?
4) Explain about rural and forest fire?
5) What is the motive of good plant layout?

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FSS040-ADVANCED DIPLOMA IN INDUSTRIAL SAFETY

ONE YEAR EXAMINATION NOVEMBER-2025

FSS040-02 PROCESS SAFETY ENGINEERING & MANAGEMENT

TIME: 3 Hours **Marks: 100**

INSTRUCTIONS

* 43 questions are there in total
* Write answers to each question in proportion to the mark allotted
* During the first 15 minutes read the questions carefully

I. FILL IN THE BLANKS - ANSWER FOR ANY 10 QUESTIONS **1 x 10 = 10**

1) A system of insurance would prevent time burden from pressing too heavily on any _____
2) _____ must also be isolated from other incompatible substances.
3) _____ is the recommended minimum temperature for office work and similar non physical activities
4) "PASS" stands for _____
5) The most dangerous place to use electrical equipment is _____
6) OSHA's Process Safety Management standard emphasizes the management of hazards associated with _____
7) _____ should be addressed when determining operating limits
8) Different parameters will be required from those of normal operation.
9) Process Safety incidents are generally caused by failure of _____
10) A safe plant is the one in which _____
11) Process Safety is a _____ Know your role and work with your fellow employees to protect yourself and others
12) _____ should be given to processes with the potential of adversely affecting the largest number of employees
13) The employer must perform an initial PHA on all processes involving _____ covered by the PSM standard
14) Employers must compile written process safety information before conducting any _____ required by the standard
15) A major causal finding by CSB investigators of the BP American Refinery explosion was that BP and similar companies _____

II. DEFINE THE FOLLOWING - ANSWER FOR ANY 10 QUESTIONS **2 x 10 = 20**

1) What is an Industrial Hygiene?
2) What is the Maintenance Engineering?
3) Define Predictive Maintenance (PDM)
4) Write short notes on Maintenance planning
5) Define Safety Survey?
6) Define Accident?
7) What is Risk?
8) How the PSM Standard Applies?
9) Process Safety Information?
10) Block Flow Diagrams?
11) Hot Work Permit?
12) Write notes on Halons?
13) List out Types of Process Flow Diagrams?
14) BP American Refinery Explosion – Texas City, Texas (March 23, 2005)?
15) Carbon steel valve?

III. WRITE BRIEF ANSWER FOR ANY 5 QUESTIONS **5 x 5 = 25**

1) Explain about Maintenance manager?
2) Explain the Basic Types of Organizational Models?
3) What are the types of maintenance methods?explain?
4) Phillips 66 Houston Chemical Complex Pasadena, Texas –Oct. 23, 1989?
5) What you mean by inherent safety?
6) Application of Contractors?
7) Compliance Audits?
8) Explain the Line and staff functions for safety?

IV. WRITE LONG ANSWER FOR ANY 3 QUESTIONS **15 x 3 = 45**

1) Briefly explain about the risk matrix with case study?
2) Explain about Process Hazard Analysis (PHA)?
3) Explain the detailed method of designing water deluge system?
4) Explain the importance of Emergency planning in process industries. Explain the detailed procedure and scope such a study?
5) Explain the role of OFF- site emergency preparedness plan in dealing with a disaster in connection with a petrochemical plan?

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FSS040-ADVANCED DIPLOMA IN INDUSTRIAL SAFETY

ONE YEAR EXAMINATION NOVEMBER-2025

FSS040-03 OIL AND GAS SAFETY ENGINEERING & MANAGEMENT

TIME: 3 Hours **Marks: 100**

INSTRUCTIONS

* 43 questions are there in total
* Write answers to each question in proportion to the mark allotted
* During the first 15 minutes read the questions carefully

I. FILL IN THE BLANKS - ANSWER FOR ANY 10 QUESTIONS **1 x 10 = 10**

1) _____ right at the top with management commitment as a critical ingredient in a company's safety and health management system
2) _____ are the two factors that usually determine how often safety committees should meet
3) _____ percentage of the oil is recovered from primary recovery of EOR methods.
4) ASP stands for _____
5) _____ chemical used in surfactants.
6) CBM stands for _____
7) _____ is typically responsible to coordinate all chemical use on the wellsite
8) _____ will require that recognized hazards which are generally foreseeable on the wellsite are properly eliminated or controlled
9) Using the PDSA Cycle, it's important that changes in a training program small scale to _____
10) Requirements are developed, solicitations are sought, contractors are selected, and contracts are awarded during _____
11) _____ objectives describe outcomes in terms of specific, observable, and measurable behaviours
12) Analyze the project for the potential for _____
13) The best control measure to control a hazard is to _____ it.
14) Many _____ develop and implement formal safety recognition programs because that is what they've been told works best and that is what everyone else does.
15) The best _____ involve employees at every level of the organization.

II. DEFINE THE FOLLOWING - ANSWER FOR ANY 10 QUESTIONS **2 x 10 = 20**

1) What are the following of The baseline survey?
2) Write short notes on Initial Training
3) Define SWAG?
4) Define Effective Safety Leadership?
5) Define Continuous Improvement?
6) Writing Safety Programs?
7) Management and Employees Must Be Involved?
8) Suggestion Program?
9) Plan for Wellsite Analysis?
10) Elimination?
11) Engineering Controls?
12) Analyze for Excavation Hazards?
13) Trainer explains and performs- learner observes?
14) Stairways and Ladders?
15) Do you conduct welding, cutting, or brazing at your jobsite?

III. WRITE BRIEF ANSWER FOR ANY 5 QUESTIONS **5 x 5 = 25**

1) Explain Accountability for Safety?
2) Who is responsible for safety on the oil and gas wellsite construction? explain
3) Explain briefly about screening criteria for EOR Methods?
4) Explain briefly about nano surfactant?
5) Real Safety Commitment?
6) Write notes on understand who is responsible for safety on the oil and gas wellsite construction?
7) Write any three Elements of Total Safety Education and Training?
8) Hazard Communication Standard?

IV. WRITE LONG ANSWER FOR ANY 3 QUESTIONS **15 x 3 = 45**

1) Explain about Safety Management System (SMS) Basics?
2) Explain short notes on a) Alkali flooding b) Polymer flooding?
3) Explain Hazard Prevention and Control?
4) Explain emission estimation using any one example?
5) Explain in detail the composition of crude oil?

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FSS040-ADVANCED DIPLOMA IN INDUSTRIAL SAFETY

ONE YEAR EXAMINATION NOVEMBER-2025

FSS040-04 OFFSHORE SAFETY ENGINEERING & MANAGEMENT

TIME: 3 Hours **Marks: 100**

INSTRUCTIONS

* 43 questions are there in total
* Write answers to each question in proportion to the mark allotted
* During the first 15 minutes read the questions carefully

I. FILL IN THE BLANKS - ANSWER FOR ANY 10 QUESTIONS **1 x 10 = 10**

1) Offshore oil and gas development projects are characterised by _____, tight time schedules and the evolving technology through sometimes unproven conditions
2) The _____ specifically involves the identification of the safety need conducted in relation to the project classification and the detailing product specification during the evaluation of the project design process.
3) SOLAS stands for _____
4) Expand HAZOP
5) Expand IDLHS _____
6) Hardware's rated capacity decreases when it is pulled from any direction other than _____
7) _____ should be worn while welding, cutting and burning
8) Be sure to consider the number of legs on multi leg slings when determining _____ capacity.
9) Hardware's _____ decreases when it is pulled from any direction other than vertical
10) Remember to add the _____ to the total weight of the cylinders.
11) _____ are standardized by material and wall thickness
12) Hot work permit should be taken prior to start the _____ such as Grinding, Gas cutting & welding
13) _____ shall be conducted only by qualified and experienced personnel.
14) Flammable substances shall not be stored with _____
15) Cotton hand gloves should be _____ while Rigging.

II. DEFINE THE FOLLOWING - ANSWER FOR ANY 10 QUESTIONS **2 x 10 = 20**

1) Write short notes on Engineering Design Methods
2) What is the Fuzzy inference engine?
3) Define Rig Automation?
4) Define control system?
5) Define Jack up rig?
6) Define pre-lift reminders for riggers?
7) Define site safety meetings?
8) Define fire prevention and emergency response procedure?
9) Define site safety officer?
10) Synthetic round slings?
11) What are the following precautions are taken while operating a crane?
12) Pneumatic tools and equipments?
13) Welder?
14) Pumps, fans, welding machines, boilers, and miscellaneous equipment?
15) Crawler crane travel one track?

III. WRITE BRIEF ANSWER FOR ANY 5 QUESTIONS **5 x 5 = 25**

1) Describe about Safety Management Models?
2) Describe Fundamentals of Fuzzy Reasoning Approach
3) What are the human factors in hazard control?
4) Cranes?
5) Scaffolding and works at height?
6) Compressed air?
7) Inspections of synthetic round slings?
8) Inspections of wire rope slings?

IV. WRITE LONG ANSWER FOR ANY 3 QUESTIONS **15 x 3 = 45**

1) Describe about Methodology?
2) Write a short notes on a) BOP system b) DP rig Vs Moored rig?
3) Write long notes on determine the weight of the load?
4) Explain Select the right sling based on load type-explain it?
5) Write long notes Safety Tips for Common Industry Rigging Applications?

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FSS040-ADVANCED DIPLOMA IN INDUSTRIAL SAFETY

ONE YEAR EXAMINATION NOVEMBER-2025

FSS040-05 PETRO CHEMICAL SAFETY ENGINEERING & MANAGEMENT

TIME: 3 Hours **Marks: 100**

INSTRUCTIONS

* 43 questions are there in total
* Write answers to each question in proportion to the mark allotted
* During the first 15 minutes read the questions carefully

I. FILL IN THE BLANKS - ANSWER FOR ANY 10 QUESTIONS **1 x 10 = 10**

1) In many countries such sites come under specific legislation with detailed _____ requirements imposed on the site operators.
2) Process safety incidents may also impact business profitability, _____ and viability
3) A _____ is a logic diagram showing major items of equipment and how they relate to the process route
4) PFDs are frequently used as the basis for _____ on which process safeguarding equipment
5) _____ are used in engineering design and as a basis for risk assessments of the process operation, such as HAZOP
6) _____ is a widely used method of refining lubricating oils as well as a host of other refinery stocks
7) Catalyst steam stripping and regeneration create _____ containing sour water and ammonia
8) _____ are needed to prevent liquid surges from entering gas compressors
9) _____ are used to provide air to certain processes.
10) _____ can be located in classified areas, providing that classification requirements are met
11) _____ is an important part of steam generation
12) _____ may be either batch-produced or continuously compounded.
13) Asphalt for roofing materials is produced by _____
14) Phillips and UOP are the two common types of _____ processes in use
15) Isomerization converts n-butane, n-pentane and n-hexane into their respective _____ of substantially higher octane number

II. DEFINE THE FOLLOWING - ANSWER FOR ANY 10 QUESTIONS **2 x 10 = 20**

1) What is the Definition of process safety?
2) What is an Independence of protection systems?
3) What is the Historical perspective?
4) Define Thermo dynamics?
5) Define valves?
6) Define Hydrostatic pressure?
7) Define the solvent extraction and dewaxing?
8) Define the catalytic reforming?
9) Naphthenes?
10) Gasoline?
11) Residual fuels?
12) The fractionating tower?
13) Uses of lube-oil hydrotreating?
14) Sulfuric acid alkylation process?
15) Electric power?

III. WRITE BRIEF ANSWER FOR ANY 5 QUESTIONS **5 x 5 = 25**

1) What are an Other business impacts? explain
2) Explain about continuity equation and equation of motion?
3) Write a short notes on velocity field?
4) Basics of crude oil
5) Fluid catalytic cracking
6) History of refining
7) Fluid catalytic cracking
8) Polymerization

IV. WRITE LONG ANSWER FOR ANY 3 QUESTIONS **15 x 3 = 45**

1) Describe about Clarifying roles with tables?
2) Describe about Major Refinery Products?
3) Description of Petroleum Refining Processes and Related Health and Safety Considerations?
4) Write about Catalytic Cracking?
5) Lubricant, Wax and Grease Manufacturing Process?

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FSS040-ADVANCED DIPLOMA IN INDUSTRIAL SAFETY

ONE YEAR EXAMINATION NOVEMBER-2025

FSS040-06 FIRE AND SAFETY ENGINEERING & MANAGEMENT

TIME: 3 Hours **Marks: 100**

INSTRUCTIONS

* 43 questions are there in total
* Write answers to each question in proportion to the mark allotted
* During the first 15 minutes read the questions carefully

I. FILL IN THE BLANKS - ANSWER FOR ANY 10 QUESTIONS **1 x 10 = 10**

1) Smoking is _____ in any storage area under any conditions.

2) _____ must be handled in a manner that will not cause damage.

3) Portable lighting used in _____, such as tanks or boilers, must be operated at no more than 12 volts or must be protected by GFCI's.

4) What is meant by safety audit

5) An _____ is the result of a sudden release of energy in the earth crust that creates.

6) _____ have fire and explosion hazards identical to those of the same material when not radioactive.

7) _____ any gas that will burn in normal concentrations of oxygen in the air (acetylene).

8) The _____ is used to control where, when, and by whom liquids are stored, handled, and used.

9) Spontaneous heating frequently results from _____ of agricultural products, animal oils, vegetable oils, and other organic products.

10) Flammable liquids, for the most part, must be properly stored, as in a " _____ "

11) Storage also must be kept _____ inches away from ceilings

12) Staircase and corridor lighting shall also be connected to alternate source of _____

13) The words _____ shall be conspicuously displayed in fluorescent paint on the lift landing doors at each floor level.

14) Fire escape shall be constructed of _____ materials

15) Minimum Width Provision for _____ :As provided in Building ByeLaws 4.8.7

II. DEFINE THE FOLLOWING - ANSWER FOR ANY 10 QUESTIONS **2 x 10 = 20**

1) Define Environmental Health & Safety?
2) Define Housekeeping?
3) Write short notes on Fire Safety Training for Office Employees?
4) Define Procedures For Fire Drills?
5) Explain fire?
6) Identify types of hazards?
7) Common fire hazards?
8) Electrical problems?
9) Dikes and drainage requirement?
10) Container and Portable Tank Storage?
11) Fuel Dispensing?
12) Can gases cause major disasters?
13) Toxic Chemicals?
14) What are the following techniques Explosive fire prevention measures embrace?
15) List out Hazards by Occupancy of Assembly Occupancies?

III. WRITE BRIEF ANSWER FOR ANY 5 QUESTIONS **5 x 5 = 25**

1) What are Tent/canopy erection and set-up considerations? explain
2) What are the fire precautions needed while cooking?
3) Write any fire types of fire tender?
4) Recognize and categorize hazardous materials?
5) What are further grouped as follows at Gases? explain?
6) Procedure for clearance from fire service?
7) Write notes on Renewal of fire clearance?
8) Write notes on Electrical services?

IV. WRITE LONG ANSWER FOR ANY 3 QUESTIONS **15 x 3 = 45**

1) Write long notes on Fire Safety Program In The Residence Halls?
2) Write long notes on Ignition source-electrical hazards?
3) Describe Overview of Flammable and Combustible Liquids?
4) Explain EXIT REQUIREMENT As provided in Building Bye-Laws 4.8?
5) Explain Lift Enclosure/lift?

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FSS040-ADVANCED DIPLOMA IN INDUSTRIAL SAFETY

ONE YEAR EXAMINATION NOVEMBER-2025

FSS040-07 INTERNATIONAL HEALTH AND SAFETY LEGAL REQUIREMENTS

TIME: 3 Hours **Marks: 100**

INSTRUCTIONS

* 43 questions are there in total
* Write answers to each question in proportion to the mark allotted
* During the first 15 minutes read the questions carefully

I. FILL IN THE BLANKS - ANSWER FOR ANY 10 QUESTIONS **1 x 10 = 10**

1) Ensure good _____ with others involved

2) Society rightly places great faith in the _____, trusting engineers and technicians to regulate themselves on its behalf

3) AIST stands for _____

4) CDR stands for _____

5) EA75 stands for _____

6) Terminate: Remove the risk by changing a _____ Best option.

7) Omission _____ to act.

8) SANS _____

9) _____ as an employee during the course of employment, or as a self-employed person during such time as s/he devotes to work.

10) Compensation for _____ Act (130 of 1993):

11) Cigarettes and butts are a health and safety hazard - they contain toxic and non _____ which can remain in the environment for up to 10 years, and they can start runaway fires

12) The _____ requires the employer to ensure that all staff who work with ladders are properly informed and trained in the correct use of ladders.

13) Untidiness and lack of organisation can lead to _____

14) _____ = likelihood/probability that injury or damage will happen, if a situation is out of control

15) _____ : such as blood-borne infections, viruses, bacteria, fungi, insect bites, faeces, poisonous plants and animals.

II. DEFINE THE FOLLOWING - ANSWER FOR ANY 10 QUESTIONS **2 x 10 = 20**

1) Define Risk Management?
2) Define Profile your health and safety risks
3) Define Confined Spaces?
4) The Vice-Chancellor?
5) Value of health and safety reps?
6) Health and safety rep appointment?
7) Duties of the committee?
8) Unsafe conditions?
9) Unsafe acts?
10) Contents of first aid box?
11) Firefighting equipment?
12) Emergency team?
13) Emergency kit?
14) PPE – personal protective equipment?
15) Proactive monitoring?

III. WRITE BRIEF ANSWER FOR ANY 5 QUESTIONS **5 x 5 = 25**

1) Write notes on Working with electricity?
2) Explain about Noise induced hearing loss?
3) The principles of health and safety?
4) Procedure for health and safety inspections?
5) Health and safety checklists?
6) Response to fire?
7) Campus-wide crisis?
8) Environment?

IV. WRITE LONG ANSWER FOR ANY 3 QUESTIONS **15 x 3 = 45**

1) How to Carry out a risk assessment? explain
2) Briefly Explain about a) Control and Abatement of environmental Pollution b) Bio medical waste (Management and handling) rules 1989.
3) Briefly Explain about a) Health and safety work act OSHA 18000-ISO 14000 b) Occupational Safety and Health Act of USA (The Williames-Steiger act of 1970)
4) How to maintain health, safety, hygiene and security practices Explain?
5) Write long notes on Quarterly health and safety inspections?