

Advanced Diploma in Construction Safety (ADCS)

SECOND SEMESTER

Paper-VII: Occupational Health & Safety – I

(Code: ADCS-VII)

Total Marks: 75

Section A

Marks: 30

7.1- Chemical & Biological Hazards at Construction Operation/ Projects & Control

Syllabus- Acute and chronic health effects of substances liable to be absorbed through skin absorption, ingestion, and inhalation in the form of Dusts, Fumes, Mists, Gases, and Vapours & biological agents such as bacteria, virus, fungi etc.

Assessment of airborne contaminants in the work environment-including various methods of air sampling like dynamic or active sampling, passive sampling or dosimetry for area and personal sampling, relevant analytical methods Biological sampling, and analysis.

Permissible level of Chemical substances in the work environment- Permissible Limits of Exposure as laid down in BOCW Rule. Control of airborne contaminants by substitution, isolation, mechanization, Wet methods, Industrial Ventilation – dilution and local exhaust systems, House keeping, Personal Hygiene and Maintenance.

Section B

Marks: 25

7.2- Physical and Psychological Health Hazards and Control

Syllabus- Effects of occupational exposure,
Methods of assessment,

Permissible standards and prevention and control measures of physical Hazards,

Thermal stress- Physiology of Heat regulation, Heat disorders,

Measurement of Thermal stress using different heat stress indices,

Permissible limits of heat stress.

Noise- Sources and its control. Effect of noise on the auditory system and health. Permissible limits for noise.

Vibration: Effects, measurement and control measures.

Psychological Health : Mental health at workplace, Various hazards such as stress, anxiety, panic disorder, depression, post traumatic stress disorder etc, symptoms, causes, and control measures

Section C

Marks: 20

7.3- Work Physiology & Ergonomics

Syllabus- Classification of workload.

Work capacity and man-job alignment.

Fatigue and rest allowances.

Ergonomics, fitting the task to man.

Application of ergonomics in safety and Health management.

Fitness criteria for work.

Module wise Weightage of Marks

Paper No	Name of the Subject	Sub module	Name of the Module	Weightage of Marks
Paper VII	Occupational Health & Safety – I	7.1	<i>Chemical & Biological Hazards at Construction Operation/ Projects & Control</i>	30
		7.2	<i>Physical and Psychological Health Hazards and Control</i>	25
		7.3	Work Physiology & Ergonomics	20
			TOTAL Marks	75

Paper-VIII: Occupational Health & Safety – II

(Code: ADCS-VIII)

Total Marks: 75

Section A

Marks: 30

8.1- Occupational Diseases, Tests & Mitigation Plan

Common occupational diseases.

Occupations involving risks of contracting these diseases.

Mode of causation of the diseases and its effects.

Diagnostic methods, Physiological tests in occupational health assessment.

Methods of prevention.

Compensation for occupational diseases.

Evaluation of injuries.

Industrial medical services in an industrial establishment and its functions.

Occupational diseases of the Lungs.

Occupational Dermatitis.

Occupational Cancer.

Pre-employment and periodic medical examination of workers.

Medical surveillance for control of occupational diseases.

Health records, fundamentals of first-aid. Burns, fractures, suffocation, toxic ingestion, bleeding wounds.

Artificial Respiratory techniques.

Section B

Marks: 25

8.2- Personal Protective Equipment (PPEs)

Benefits of PPE, Limitations of PPE, Information, Instruction and Training on PPE, Selection of IS standards, types of PPE.

Respiratory: Dust mask, Positive pressure, Powered Respirators, Cartridge type Gas Respirators, Self-contained Breathing apparatus.

Non Respiratory: Head Protection, Eye Protection, Foot Protection, Hand and Arm Protection, Body Protection, Fall Protection.

Personal buoyancy equipment : Life jacket, Life buoy ring etc.

Section C

Marks: 20

8.3- Welfare Facilities

Various provisions prescribed in legal requirements

Module wise Weightage of Marks

Paper No	Name of the Subject	Sub module	Name of the Module	Weightage of Marks
Paper VIII	Occupational Health & Safety – II	8.1	Occupational Diseases, Tests & Mitigation Plan	30
		8.2	Personal Protective Equipment (PPEs)	25
		8.3	Welfare Facilities	20
			TOTAL Marks	75

Paper-IX: Safety in Construction Operation- I

(Code: ADCS-IX)

Total Marks: 75

Section A

Marks: 15

9.1- Temporary Structure at Work Site

Temporary Structure at Work Site - Hazards and Safety Precautions

Section B

Marks: 10

9.2- Underground Works

Underground Works - Excavation, drilling and blasting, tunneling, piling and safety in using and operating machinery and equipment relating to the above components.

Section C

Marks: 10

9.3- Above Ground Works

Above Ground works-Structural frame and form work, Concreting, wall and floor openings, Structural steel work.

Section D

Marks: 20

9.4- Work at Height

High incidence of serious accidents in working at heights.

Safety features associated with design. Construction and use of stairways, runways, ramps, gangways, floors, ladders of different types,

Scaffolds of different types including Boatswain's chair.

Working on roofs, other safety requirements while working at heights.

Prevention of fall of persons at floor level.

Potential tripping and slipping hazards.

Section E

Marks: 10

9.5- Under Water Operations & Working around Water Bodies

Under Water Operations & Working Around Water Bodies: Well sinking, caissons, under water concreting, cofferdams, safety in use and operation of related machinery and equipment.

Work over water-Hazards and Safety precautions.

Section F**Marks: 10****9.6- Safety in Demolition Operations**

Planning and permit, precautions prior to demolition, protection of the public, precautions during demolition, sequence of demolition operations from safety point.

Module wise Weightage of Marks

Paper No	Name of the Subject	Sub module	Name of the Module	Weightage of Marks
Paper IX	Safety in Construction Operation- I	9.1	Temporary Structure at Work Site	15
		9.2	Underground Works	10
		9.3	Above Ground Works	10
		9.4	Work at Height	20
		9.5	Under Water Operations & Working around Water Bodies	10
		9.6	Safety in Demolition Operations	10
			TOTAL Marks	75

Paper-X: Safety in Construction Operation- II**(Code: ADCS-X)****Total Marks: 75****Section A****Marks: 15****10.1- Confined Space**

Meaning of the term '*Confined Space*'; Typical confined spaces found during construction activities (e.g. trenches, sewers, chambers, tanks, pits, cellars etc).

Hazards and risks associated with confined spaces: exposure to toxic, explosive and oxygen deficient atmospheres; heat; water; free-flowing solids; restricted space. Control measures for confined space working. *Precautions for safe entry:* avoidance where possible, risk assessment and planning, permit-to-work procedures, requirements of permit and lock off, training; atmospheric testing, means of access, personal protective equipment, Monitoring arrangements, Emergency arrangements.

Section B**Marks: 10****10.2- Prestressed Concrete Structure**

Prestressed Concrete Structure - What is prestressing, definition of prestressed concrete, types of prestressing, essential devices for pre-tensioning and post-tensioning, safety precautions.

Section C**Marks: 10****10.3- Movement of Materials and Personnel**

Heavy/Long items, Railway wagons, motor trucks, vehicles, Hazardous materials, etc.

Section D**Marks: 15****10.4- Blasting Operation Related Safety**

Blasting Operation Related Safety (Including Handling, Storing of Explosives Related Safety)-
Hazards and Safety Precautions

Section E**Marks: 15****10.5- Road Works**

Road Works related safety-*Hazards and Safety Precautions*

Section F**Marks: 5****10.6- Special Works**

High rise Structures- Erection of distilling / fractional columns in refinery, chimney for super thermal power plant etc, silos, oil & gas installations, aerial railway, cable car installation etc.

Section G**Marks: 5****10.7- Special Operations**

Safety related to special type of operations: Transmission tower, Railways, Power Plants, Transformer Installation.

Module wise Weightage of Marks

Paper No	Name of the Subject	Sub module	Name of the Module	Weightage of Marks
Paper X	Safety in Construction Operation- II	10.1	Confined Space	15
		10.2	Prestressed Concrete Structure	10
		10.3	Movement of Materials and Personnel	10
		10.4	Blasting Operation Related Safety	15
		10.5	Road Works	15
		10.6	Special Works	5
		10.7	Special Operations	5
			TOTAL Marks	75

Paper XI: Field Visit, Case Study & Report Submission

Marks- 100

For this paper, the students will do field visits. They would prepare a report on the basis of their field visit and case study. The students would present either individual or group presentations on theories and practices on the basis of the above.

Paper XII: Seminar & Viva Voce

Marks- 100

The students would prepare a paper on different topics of the ADCS course and give presentations on those topics either individually or group-wise (50 marks) and would also appear in a viva-voce test (50 marks) on the entire syllabus.