

Total No. of Questions: 6

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Enrollment No.....



Faculty of Engineering
End Sem Examination May-2024
FT3EL08 Rescue Equipments & Techniques

Programme: B.Tech.

Branch/Specialisation: FT

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

- Q.1 i. Which type of electric power tool is best suited for cutting through metal surfaces quickly and efficiently? **1**
(a) Electric cutter (b) Electric saw
(c) Chain saw (d) Hydraulic cutter
- ii. What is the primary working principle of small gears? **1**
(a) Linear motion (b) Rotary motion
(c) Oscillating motion (d) Reciprocating motion
- iii. In a rescue operation, what does "Rescue by Ordinary Means" typically involve? **1**
(a) Using advanced hydraulic equipment
(b) Employing specialized techniques
(c) Relying on standard procedures and tools
(d) Utilizing aerial platforms
- iv. Which of the following is a key advantage of using a Hydraulic Platform in firefighting? **1**
(a) Increased portability
(b) Ability to access narrow spaces
(c) Enhanced manoeuvrability in tight spaces
(d) Ability to reach great heights for firefighting and rescue operations
- v. Which method of carrying an injured person involves one person carrying the victim over their shoulder? **1**
(a) Fireman carry (b) Two men carry
(c) Three man carry (d) Chair carry

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- vi. Which type of rescue operation primarily involves evacuating individuals from tall buildings, such as skyscrapers, during emergencies? **1**
 (a) Rescue from high rise buildings
 (b) Rescue from major disasters such as earthquake or flood
 (c) Rescue from fire incident
 (d) Rescue using different types of drags
- vii. What factors are typically considered when calculating the capacity and time duration of a Breathing Apparatus (B.A.) Set? **1**
 (a) Ambient temperature and humidity
 (b) Size and weight of the individual wearing the B.A. Set
 (c) Oxygen concentration and flow rate
 (d) Type and construction materials of the B.A. Set
- viii. Which type of Breathing Apparatus (B.A.) Set utilizes a regenerative process to recycle exhaled air, extending the duration of use? **1**
 (a) Open-circuit B.A. Set (b) Closed-circuit B.A. Set
 (c) Positive-pressure B.A. Set (d) Negative-pressure B.A. Set
- ix. Which type of gas mask relies on a supply of clean air from an external source, such as a compressed air cylinder or air compressor? **1**
 (a) Air-purifying respirator (b) Powered air-purifying respirator
 (c) SCBA (d) Escape respirator
- x. What is the primary purpose of a gas mask? **1**
 (a) To provide protection against extreme temperatures
 (b) To supply fresh air in confined spaces
 (c) To filter out harmful gases and particles from the air
 (d) To improve visibility in smoky environments
- Q.2 i. What are the advantages of synthetic ropes over natural materials? **2**
 ii. What is the use of pneumatically operated tools in rescue operation during major disaster? **3**
 iii. Describe the aluminium extension ladder with the help of diagram. **5**
- OR iv. Describe the types of general-purpose tools used in fire services. **5**
- Q.3 i. What is the major importance of canteen van during rescue operation? **2**
 ii. Explain in detail about specification, construction and application of emergency rescue tender. **8**

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- OR iii. Explain the maintenance, inspection & cleaning of portable and turn table ladders. **8**
- Q.4 i. What is two man carry? **3**
 ii. Explain different types of knots & hitches. **7**
- OR iii. What are the rescue techniques adopted during highway accidents? **7**
- Q.5 i. How do you calculate the working duration of a BA set? **4**
 ii. Discuss the constructional features & working principle of SCBA. **6**
- OR iii. Differentiate between the respiratory & non-respiratory equipment used in rescue operation. **6**
- Q.6 Attempt any two:
 i. Explain different types of eye and face PPE. **5**
 ii. Explain canister type respirator. **5**
 iii. Write short note on air lifting bags. **5**

Marking Scheme

Rescue Equipment's and Techniques (T) - FT3EL08 (T)

Q.1	i)	Which type of electric power tool is best suited for cutting through metal surfaces quickly and efficiently? a) Electric Cutter	1
	ii)	What is the primary working principle of small gears? b) Rotary motion	1
	iii)	In a rescue operation, what does "Rescue by Ordinary Means" typically involve? c) Relying on standard procedures and tools	1
	iv)	Which of the following is a key advantage of using a Hydraulic Platform in firefighting? d) Ability to reach great heights for firefighting and rescue operations	1
	v)	Which method of carrying an injured person involves one person carrying the victim over their shoulder? a) Fireman carry	1
	vi)	Which type of rescue operation primarily involves evacuating individuals from tall buildings, such as skyscrapers, during emergencies? a) Rescue from High rise buildings	1
	vii)	What factors are typically considered when calculating the capacity and time duration of a Breathing Apparatus (B.A.) Set? c) Oxygen concentration and flow rate	1
	viii)	Which type of Breathing Apparatus (B.A.) Set utilizes a regenerative process to recycle exhaled air, extending the duration of use? b) Closed-circuit B.A. Set	1
	ix)	Which type of gas mask relies on a supply of clean air from an external source, such as a compressed air cylinder or air compressor? c) SCBA	1
	x)	What is the primary purpose of a gas mask? c) To filter out harmful gases and particles from the air	1
Q.2	i.	Advantages of synthetic ropes over natural materials?	2
	ii.	Use of pneumatically operated tools 3 tools	3
	iii.	Aluminium extension ladder diagram/ Description	2.5/2.5
OR	iv.	Types of general-purpose tools/ uses/applications	2/1.5/1.5

Q.3	i.	Importance of Canteen Van	2
	ii.	Emergency Rescue Tender/Specification/construction/application	2/2/2/2
OR	iii.	Portable and turn table ladders/maintenance/inspection & cleaning	2/2/2/2
Q.4	i.	Two man carry	3
	ii.	Different types of knots & hitches? 3 points	3.5/3.5
OR	iii.	Detail Rescue techniques during Highway accidents?	7
Q.5	i.	Calculate the working duration of a BA set	4
	ii.	Constructional features/ working principle of SCBA?	3/3
OR	iii.	Differentiate between the respiratory & non-respiratory equipment?	3/3
Q.6	i.	Explain different types of Eye and Face PPE?	2.5/2.5
	ii.	Explain canister type respirator?	5
	iii.	Air lifting bags/ working/application	2/1.5/1.5
