

MECHANIC DIESEL Solved Papers (With Explanation)


Useful for : RRB Assistant Loco Pilot, Indian Ordnance Factory (IOF), Maintainer (DMRC, LMRC, NMRC, BMRC, JMRC), ISRO Technician, CRPF Constable Tradesman, CRPF Overseer, HAL Fitter, MES Fitter, VIZAAG Steel Fitter, SAIL, GAIL, BHEL, NTPC, ONGC, BARC, DFCCIL, MAZAGON DOCK Ltd. and Other Technician Exams.

Chief Editor
A.K. Mahajan

Compiled & Written by
Er. Brijesh Maurya

Computer Graphics by
Balkrishna Tripathi & Charan Singh

Editorial Office
12, Church Lane Prayagraj-211002

 **Mob. : 9415650134**

Email : yctap12@gmail.com

website : www.yctbooks.com/www.yctfastbook.com

© All rights reserved with Publisher

Publisher Declaration

Edited and Published by A.K. Mahajan for YCT Publications Pvt. Ltd.
and printed by R.A. Security Printers In order to Publish the book,
full care has been taken by the Editor and the Publisher,
still your suggestions and queries are welcomed.

In the event of any dispute, the judicial area will be Prayagraj.

₹ : 795/-

INDEX

■ ALP & other Technician Exam Syllabus.....	3-5
■ I.T.I. Mechanic Diesel & other Technician Exam paper Analysis Chart.....	6-7
■ Trend Analysis of Mechanic Diesel Through Pie Chart and Bar Graph	8
■ Trade Introduction and Occupation & Health	9-30
■ Hands and Power Tools.....	31-47
■ System of Measurement	48-106
■ Fastener.....	107-144
■ Cutting Tools.....	145-176
■ Limit, Fit and Tolerances	177-184
■ Drilling Machine	185-192
■ Taps, dies and Hand Reamer.....	193-201
■ Sheet Metal Working.....	202-213
■ Basic Electricity and Electronics	214-259
■ Welding and Heat Treatment	260-303
■ Non-destructive Testing Methods.....	304-308
■ Introduction of Hydraulics and Pneumatics	309-326
■ Auto Industries.....	327-357
■ Introduction of Engine	358-391
■ Diesel Engine and its Components	392-439
■ Engine Assembly	440-485
■ Cooling System and Lubrication System & its Elements.....	486-534
■ Intake and Exhaust System and its Component	535-559
■ Diesel Fuel System and its Component.....	560-598
■ Electronic Diesel Control	599-606
■ Marine and Stationary Engine	607-616
■ Trouble shooting	617-635
■ Charging and Starting System.....	636-656
■ Emission Control	657-672

ALP/Technician Online Exam Syllabus

Mechanic Diesel

Short listing of Candidates for the Second Stage CBT exam shall be based on the normalized marks obtained by them in the First Stage CBT Exam.

Total number of candidates to be shortlisted for second stage shall be 15 times the community wise total vacancy of ALP and Technician Posts notified against the RRB as per their merit in First Stage CBT. However, Railways reserve the right to increase/decrease this limit in total or for any specific trade (s) as required to ensure availability of adequate candidates for all the notified posts.

Total Duration : 2 hours and 30 minutes (for Part A and Part B together)

The Second Stage CBT shall have two parts viz Part A and Part B as detailed below.

PART A

Duration: 90 Min.

No. of Questions: 100

Minimum percentage of marks for eligibility in various categories: UR-40%, OBC-30%, SC-30%, ST-25%. These percentages of marks for eligibility may be relaxed by 2% for PWD candidates in case of shortage of PWD candidates against vacancies reserved for them.

The marks scored in Part A alone shall be used for short listing of candidates for further stages of recruitment process subject to the condition that the candidate is securing qualifying mark in Part B.

(A) Mathematics

Number system, BODMAS, Decimals, Fractions, LCM, HCF, Ratio and Proportion, Percentages, Mensuration, Time and Work; Time and Distance, Simple and Compound Interest, Profit and Loss, Algebra, Geometry and Trigonometry, Elementary Statistics, Square Root, Age Calculations, Calendar & Clock, Pipes & Cistern etc.

(B) General Intelligence and Reasoning

Analogies, Alphabetical and Number Series, Coding and Decoding, Mathematical operations, Relationships, Syllogism, Jumbling, Venn Diagram, Data Interpretation and Sufficiency, Conclusions and Decision Making, Similarities and Differences, Analytical reasoning, Classification, Directions, Statement– Arguments and Assumptions etc.

(C) Basic Science and Engineering

The board topics that are covered under this shall be Engineering Drawing (Projections, Views, Drawing Instruments, Lines, Geometric figures, Symbolic Representation), Units, Measurements, Mass Weight and Density, Work Power and Energy, Speed and Velocity, Heat and Temperature, Basic Electricity, Levers and Simple Machines, Occupational Safety and Health, Environment Education, IT Literacy etc.

General awareness on current affairs in Science & Technology, Sports, Culture, Personalities, Economics, Politics and other subjects of importance.

PART B

Duration: 60 Min.

No. of Questions: 75

Syllabus For Semester System For The Trade of MECHANIC DIESEL Under Craftmen Training Scheme (CTS) By Government of India Ministry of Labour & Employment (DGE&T)

First Semester–

■ **Admission & introduction to the trade:** Introduction to the Course duration, course content, study of the syllabus. General rule pertaining to the Institute, facilities available– Hostel, Recreation, Medical and Library working hours and time table ■ **Occupational Safety & Health–** Importance of Safety and general Precautions to be observed in the shop. Basic first aid, safety signs - for Danger, Warning, caution & personal safety message. Safe handling of Fuel Spillage, Fire extinguishers used for different types of fire. Safe disposal of toxic dust, safe handling and Periodic testing of lifting equipment, Authorization of Moving & road testing vehicles.

Energy conservation-Definition, Energy Conservation Opportunities (ECOs)-Minor ECos and Medium ECos, Major ECos), Safety disposal of Used engine oil, Electrical safety tips. ■ **Hand & Power Tools:-** Marking scheme, Marking material-chalk, Prussian blue. Cleaning tools- Scraper, wire brush, Emery paper, Description, care and use of Surface plates, steel rule, measuring tape, try square. Calipers-inside and outside. Dividers, surface

gauges, scriber, punches-prick punch, center punch, pin punch, hollow punch, number and letter punch. Chisel-flat, cross-cut. Hammer- ball pein, lump, mallet. Screw drivers-blade screwdriver, Phillips screw driver, Ratchet screwdriver. Allen key, bench vice & C-clamps, Spanners- ring spanner, open end spanner & the combination spanner, universal adjustable open end spanner. Sockets & accessories, Pliers - Combination pliers, multi grip, long nose, flat-nose, Nippers or pincer pliers, Side cutters, Tin snips, Circlip pliers, external circlips pliers. Air impact wrench, air ratchet, wrenches- Torque wrenches, pipe wrenches, car jet washers Pipe flaring & cutting tool, pullers- Gear and bearing

■ **Systems of measurement, Description, care & use of - Micrometers-** Outside and depth micrometer, Micrometer adjustments, Vernier calipers, Telescope gauges, Dial bore gauges, Dial indicators, straightedge, feeler gauge, thread pitch gauge, vacuum gauge, tire pressure gauge. ■ **Fasteners-** Study of different types of screws, nuts, studs & bolts, locking devices, Such as lock nuts, cotter, split pins, keys, circlips, lock rings, lock washers and locating where they are used. Washers & chemical compounds can be used to help secure these fasteners. Function of Gaskets, Selection of materials for gaskets and packing, oil seals. ■ **Cutting tools :-** Study of different type of cutting tools like Hacksaw, File- Definition, parts of a file, specification, Grade, shape, different type of cut and uses., OFF-hand grinding with sander, bench and pedestal grinders, safety precautions while grinding. ■ **Limits, Fits & Tolerances:-** Definition of limits, fits & tolerances with examples used in auto components

■ **Drilling machine** - Description and study of Bench type Drilling machine, Portable electrical Drilling machine, drill holding devices, Work Holding devices, Drill bits. ■ **Taps and Dies :** Hand Taps and wrenches, Calculation of Tap drill sizes for metric and inch taps. Different type of Die and Die stock. Screw extractors. Hand Reamers – Different Type of hand reamers, Drill size for reaming, Lapping, Lapping abrasives, type of Laps. ■ **Sheet metal** - State the various common metal Sheets used in Sheet Metal shop Sheet metal operations - Shearing, bending, Drawing, Squeezing Sheet metal joints - Hem & Seam Joints Fastening Methods - Riveting, soldering, Brazing, fluxes used on common joints. Sheet and wire-gauges. The blow lamp- its uses and pipe fittings. ■ **Basic electricity**, Electricity principles, Ground connections, Ohm's law, Voltage, Current, Resistance, Power, Energy. Voltmeter, ammeter, Ohmmeter Multimeter, Conductors & insulators, Wires, Shielding, Length vs. resistance, Resistor ratings Fuses & circuit breakers, Ballast resistor, Stripping wire insulation, cable colour codes and sizes, Resistors in Series circuits , Parallel circuits and Series-parallel circuits, Electrostatic effects, Capacitors and its applications, Capacitors in series and parallel. Description of Chemical effects, Batteries & cells, Lead acid batteries & Stay Maintenance Free (SMF) batteries, Magnetic effects, Heating effects, Thermo-electric energy, Thermistors, Thermo couples, Electrochemical energy, Photo-voltaic energy, Piezo-electric energy, Electromagnetic induction, Relays, Solenoids, Primary & Secondary windings, Transformers, stator and rotor coils.

■ **Basic electronics :** Description of Semi conductors, Solid state devices- Diodes, Transistors, Thyristors, Uni Junction Transistors (UJT), Metal Oxide Field Effect Transistors (MOSFETs), Logic gates-OR, AND & NOT and Logic gates using switches. ■ **Introduction to welding and Heat Treatment Welding processes** – Principles of Arc welding, brief description, classification and applications. Manual Metal Arc welding -principles, power sources, electrodes, welding parameters, edge preparation & fit up and welding techniques; Oxy – Acetylene welding - principles, equipment, welding parameters, edge preparation & fit up and welding techniques; Heat Treatment Process– Introduction, Definition of heat treatment, Definition of Annealing, Normalizing, Hardening and tempering. Case hardening, Nitriding, Induction hardening and Flame Hardening process used in auto components with examples. ■ **Non-destructive Testing Methods-** Importance of Non-Destructive Testing In Automotive Industry, Definition of NDT, Liquid penetrant and Magnetic particle testing method – Portable Yoke method

Introduction to Hydraulics & Pneumatics: - Definition of Pascal law, pressure, Force, viscosity. Description, symbols and application in automobile of Gear pump-Internal & External, ■ **single acting**, double acting & Double ended cylinder; Directional control valves-2/2, 3/2, 4/2, 4/3 way valve, Pressure relief valve, Non return valve, Flow control valve used in automobile. Pneumatic Symbols, Description and function of air Reciprocating Compressor. Function of Air service unit (FRL-Filter, Regulator & Lubricator). ■ **Auto Industry** - History, leading manufacturers, development in automobile industry, trends, new product. Brief about Ministry of Road transport & Highways, The Automotive Research Association of India (ARAI), National Automotive Testing and R&D Infrastructure Project (NATRIP), & Automobile Association. Definition: - Classification of vehicles on the basis of load as per central motor vehicle rule, wheels, final drive, and fuel used, axles, position of engine and steering transmission, body and load. Brief description and uses of Vehicle hoists – Two post and four post hoist, Engine hoists, Jacks, Stands.

SECOND SEMESTER–

■ **Introduction to Engine:** Description of internal & external combustion engines, Classification of IC engines, Principle & working of 2&4-stroke diesel engine (Compression ignition Engine (C.I)), Principle of Spark Ignition Engine(SI), differentiate between 2-stroke and 4 stroke, C.I engine and S.I Engine, Direct injection and Indirect injection, Technical terms used in engine, Engine specification. Study of various gauges/instrument on a dash board of a vehicle- Speedometer, Tachometer, Odometer and Fuel gauge, and Indicators such as gearshift position, Seat belt warning light, Parking-brake-engagement warning light and an Engine-malfunction light. Different type of starting and stopping method of Diesel Engine Procedure for dismantling of diesel engine from a vehicle..

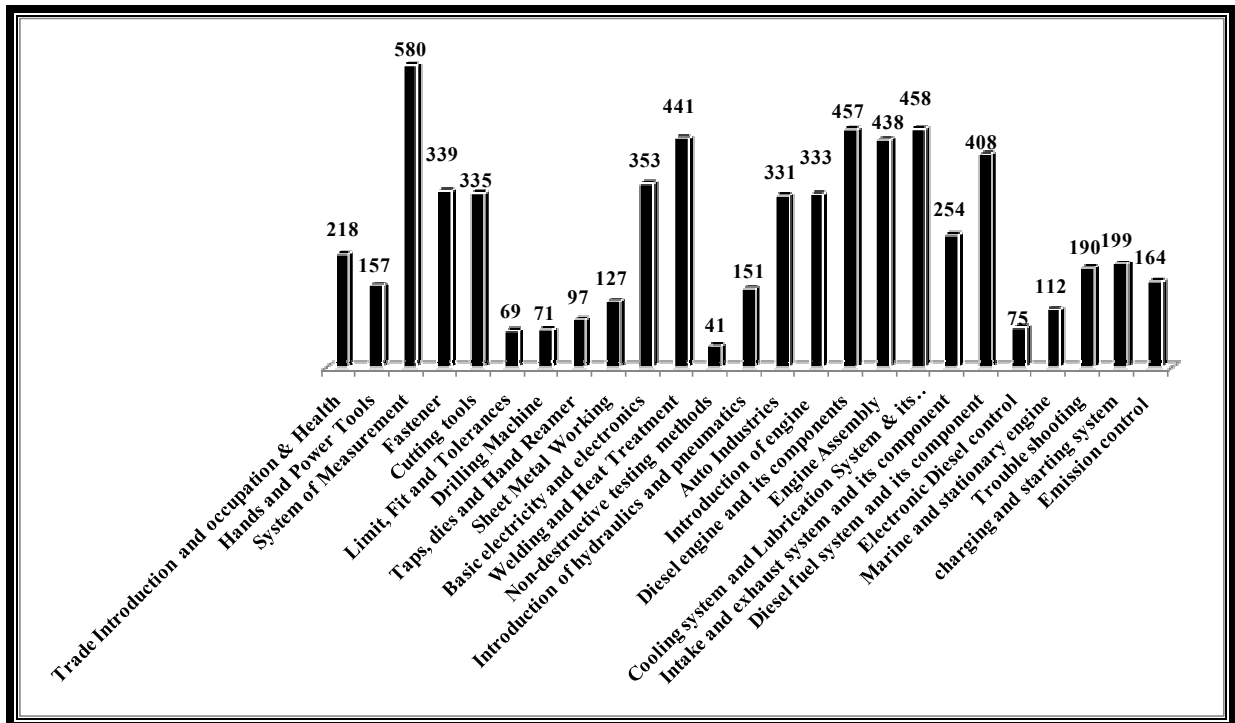
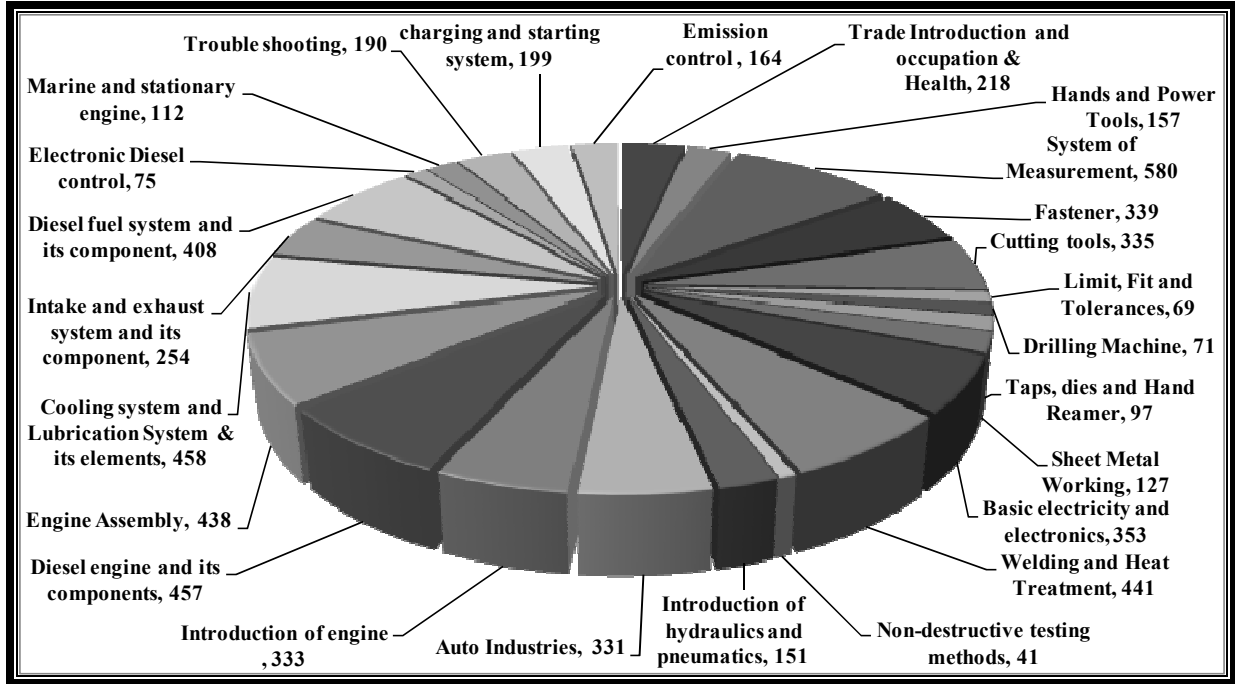
■ **Introduction to Engine:** Description of internal & external combustion engines, Classification of IC engines, Principle & working of 2&4-stroke diesel engine (Compression ignition Engine (C.I)), Principle of Spark Ignition Engine(SI), differentiate between 2-stroke and 4 stroke, C.I engine and S.I Engine, Direct injection and Indirect injection, Technical terms used in engine, Engine specification. Study of various gauges/instrument on a dash board of a vehicle- Speedometer, Tachometer, Odometer and Fuel gauge, and Indicators such as gearshift position, Seat belt warning light, Parking-brake-engagement warning light and an Engine-malfunction light. Different type of starting and stopping method of Diesel Engine Procedure for dismantling of diesel engine from a vehicle.. Description & functions of different types of **pistons**, piston rings and piston pins and materials. Used recommended clearances for the rings and its necessity precautions while fitting rings, common troubles and remedy. Compression ratio. Description & function of connecting rod, importance of big- end split obliquely, Materials used for connecting rods big end & main bearings. Shells piston pins and locking methods of piston pins. Description & function of connecting rod, importance of big- end split obliquely, Materials used for connecting rods big end & main bearings. Shells piston pins and locking methods of piston pins. Description and function of the fly wheel and vibration damper. Crank case & oil pump, gears timing mark, Chain sprockets, chain tensioner etc. Function of clutch & coupling units attached to flywheel. Description of Cylinder block, Cylinder block construction, and Different type of Cylinder sleeves (liner). ■ Engine assembly procedure with aid of special tools and gauges used for engine assembling. Introduction to Gas Turbine, Comparison of single and two stage turbine engine, Different between gas turbine and Diesel Engine. ■ Engine assembly procedure with aid of special tools and gauges used for engine assembling. Introduction to Gas Turbine, Comparison of single and two stage turbine engine, Different between gas turbine and Diesel Engine. ■ **Intake & exhaust systems** – Description of Diesel induction & Exhaust systems. Description & function of air compressor, exhauster, Super charger, Intercoolers, turbo charger, variable turbo charger mechanism. Intake system components- Description and function of Air cleaners, Different type air cleaner, Description of Intake manifolds and material, ■ **Exhaust system components-** Description and function of Exhaust manifold, Exhaust pipe, Extractors, Mufflers- Reactive, absorptive, Combination., Catalytic converters, Flexible connections, Ceramic coatings, Back-pressure, Electronic mufflers. ■ **Diesel Fuel Systems-** Description and function of Diesel fuel injection, fuel characteristics, concept of Quiet diesel technology & Clean diesel technology. Diesel fuel system components – Description and function of Diesel tanks & lines, Diesel fuel filters, water separator, Lift pump, Plunger pump, Priming pump, Inline injection pump, Distributor-type injection pump, Diesel injectors, Glow plugs, Cummins & Detroit Diesel injection. Electronic Diesel control- Electronic Diesel control systems, Common Rail Diesel Injection (CRDI) system, Hydraulically actuated electronically controlled unit injector (HEUI) diesel injection system. Sensors, actuators and ECU (Electronic Control Unit) used in Diesel Engines. ■ **Marine & Stationary Engine:-** Types, double acting engines, opposed piston engines, starting systems, cooling systems, lubricating systems, supplying fuel oil, hydraulic coupling, reduction gear drive, electromagnetic coupling, electrical drive, generators and motors, supercharging. ■ **Emission Control:-** Vehicle emissions Standards- Euro and Bhart II, III, IV, V Sources of emission, Combustion, Combustion chamber design. Types of emissions: Characteristics and Effect of Hydrocarbons, Hydrocarbons in exhaust gases, Oxides of nitrogen, Particulates, Carbon monoxide, Carbon dioxide, Sulfur content in fuels Description of Evaporation emission control, Catalytic conversion, Closed loop, Crankcase emission control, Exhaust gas recirculation (EGR) valve, , Controlling air-fuel ratios, Charcoal storage devices, Diesel particulate filter (DPF). Selective Catalytic Reduction (SCR), EGR VS SCR Description .of charging circuit operation of alternators, regulator unit, ignition warning lamp- troubles and remedy in charging system. Description of starter motor circuit, Constructional details of starter motor solenoid switches, common troubles and remedy in starter circuit. ■ **Troubleshooting :** Causes and remedy for Engine Not starting – Mechanical & Electrical causes, High fuel consumption, Engine overheating, Low Power Generation, Excessive oil consumption, Low/High Engine Oil Pressure, Engine Noise.

Mechanic Diesel Trade & Other Technician Exam Paper Analysis Chart

S.L.	Exam Name	Exam Date/Time	No. of Questions
RRB ALP and Technician			
1.	RRB ALP Mechanic Diesel	08/02/2019 (Shift-I)	75
2.	RRB ALP Mechanic Diesel	23/01/2019 (Shift-I)	75
3.	RRB ALP Mechanic Diesel	23/01/2019 (Shift-II)	75
4.	RRB ALP Mechanic Diesel	23/01/2019 (Shift-III)	75
5.	RRB ALP Mechanic Diesel	21/01/2019 (Shift-I)	75
6.	RRB ALP Mechanic Diesel	21/01/2019 (Shift-II)	75
7.	RRB ALP Ajmer	10.10.2004	20
8.	RRB ALP Ajmer	23.05.2004	10
9.	RRB ALP Ajmer	05.06.2005	18
10.	RRB ALP Allahabad	03.08.2008	15
11.	RRB ALP Allahabad	09.12.2007	16
12.	RRB ALP Bangalore	25.01.2004	14
13.	RRB ALP Bangalore	08.07.2007	15
14.	RRB ALP Bangalore	15.07.2012	20
15.	RRB ALP Bhopal	06.06.2010	12
16.	RRB ALP Bhubneswar	14.06.2009	16
17.	RRB ALP Bhubneswar	15.07.2012	10
18.	RRB ALP Bilaspur	15.07.2012	19
19.	RRB ALP Chandigarh	14.09.2008	17
20.	RRB ALP Chandigarh	15.07.2012	18
21.	RRB ALP Chandigarh	25.05.2003	14
22.	RRB ALP Chennai	06.06.2010	13
23.	RRB ALP Chennai	27.10.2002	13
24.	RRB ALP Gorakhpur	08.10.2006	11
25.	RRB ALP Gorakhpur	11.10.2009	20
26.	RRB ALP Gorakhpur	12.10.2003	20
27.	RRB ALP Gorakhpur	14.04.2002	15
28.	RRB ALP Gorakhpur	21.10.2001	12
29.	RRB ALP Guwahati	22.01.2006	16
30.	RRB ALP Jammu-Kashmir	06.06.2010	18
31.	RRB ALP Kolkata	02.11.2008	15
32.	RRB ALP Kolkata	06.02.2005	22
33.	RRB ALP Kolkata	16.07.2006	14
34.	RRB ALP Kolkata	2014	15
35.	RRB ALP Kolkata	29.09.2002	15
36.	RRB ALP Malda	16.07.2006	16
37.	RRB ALP Mumbai	03.06.2001	12
38.	RRB ALP Mumbai	05.06.2005	24
39.	RRB ALP Mumbai	14.06.2009	15
40.	RRB ALP Mumbai	15.07.2012	15
41.	RRB ALP Mumbai	16.07.2006	18
42.	RRB ALP Mumbai	05.01.2003	12
43.	RRB ALP Muzaffarpur	15.02.2009	23
44.	RRB ALP Patna	04.02.2007	18
45.	RRB ALP Patna	11.11.2001	22
46.	RRB ALP Patna	2014	18
47.	RRB ALP Ranchi	04.09.2005	16
48.	RRB ALP Ranchi	08.07.2007	15
49.	RRB ALP Ranchi	19.01.2003	17
50.	RRB ALP Ranchi	2014	10
51.	RRB ALP Ranchi	21.09.2003	15
52.	RRB ALP Secunderabad	06.06.2010	16
53.	RRB ALP Secunderabad	11.11.2001	19

54.	RRB ALP Secunderabad	29.06.2008	18
55.	RRB ALP Siliguri	2014	12
56.	RRB ALP Trivandrum	20.06.2004	19
57.	RRB ALP Ahamadabad	2014	16
58.	RRB ALP Ahamadabad	17.10.2004	14
ISRO			
59.	ISRO VSSC Technician B Mechanic Diesel	2021	80
60.	ISRO Technician B Mechanic Diesel	27/11/2016	80
61.	ISRO Technician-B Carpenter	27.11.2016	60
62.	ISRO Technician-B Fitter	20.11.2016	80
63.	ISRO Technician-B Grinder	27.11.2016	60
64.	ISRO Technician-B Motor Mechanic	27.11.2016	80
65.	ISRO Technician-B Plumber	27.11.2016	60
66.	ISRO Technician-B Turner	22.11.2016	60
DMRC/LMRC/BMRC			
67.	DMRC (Maintainer) Fitter (Evening)	15.02.2017	75
68.	DMRC (Maintainer) Fitter (Morning)	15.02.2017	75
69.	DMRC (Maintainer) Fitter	20.07.2014	75
70.	DMRC (Maintainer) Fitter	24.12.2006	75
71.	BMRC Maintainer Fitter	2016	75
72.	LMRC (Maintainer) Fitter	16.03.2016	75
73.	Noida Metro Maintainer Fitter	2017	75
DRDO			
74.	DRDO Fitter	2016	100
75.	DRDO Turner	2011	100
76.	DRDO Machinist	2016	100
77.	DRDO Motor Mechanic	2016	100
78.	DRDO Mechanic Diesel	2016	100
Indian Ordnance Factory			
79.	Indian Ordnance Factory Fitter	10.09.2017	15
80.	Indian Ordnance Factory	2016	10
81.	Indian Ordnance Factory (Itarsi)	08.05.2016	12
82.	Indian Ordnance Factory	2015	13
83.	Indian Ordnance Factory	2014	15
84.	Indian Ordnance Factory	2013	16
85.	Indian Ordnance Factory	2012	15
Other Exam			
86.	HSSC Instructor Mechanic Diesel	25.12.2021	50
87.	NCVT NIMI Mechanic Diesel	2021	100
88.	Cochin Shipyard TA Mechanic Diesel	12.01.2020	100
89.	NSQF Mechanic Diesel	2020	100
90.	RSMSSB Jr. Instructor	23.12.2019	100
91.	NCVT Mechanic Diesel	01.11.2019	100
92.	NCVT NIMI Mechanic Diesel	2019	100
93.	HPSSC Mechanic Diesel (Instructor)	2018	120
94.	KPSC Jr. Instructor Mechanic Diesel	26.09.2018	80
95.	KPSC Instructor Mechanic Diesel	17.01.2017	80
96.	MP ITI TO Mechanic Diesel	08.11.2016	100
97.	SAIL Bokaro Steel Plant	2016	100
98.	SAIL Durgapur Steel Plant	05/09/2014	100
99.	VIZAAG Steel Fitter	2015	75
100.	NTPC Fitter	2014	80
101.	BHEL Hyderabad Fitter	2014	80
102.	COAL India Fitter	2013	100
103.	CRPF Constable Tradesman	2016	45
104.	HAL Fitter	2015	75
105.	Mazagon Dock Shipbuilders Ltd.	2013	100
106.	MES Automobile Tradesman	2015	100
Total			4849

Trend Analysis of Mechanic Diesel Through Pie Chart and Bar Graph



01.

TRADE INTRODUCTION AND OCCUPATION SAFETY & HEALTH

1. **Water is used to extinguish :**

- (a) Class A fires (b) Class B fires
(c) Class C fires (d) All of the options

Cochin Shipyard T.A. Mechanic Diesel 12.1.2020

Ans. (a) : Class 'A' type of fire– Fire caught on wood, paper, clothes and hard metals is classified as 'A' type of fire.

To extinguish this type of fire, we first direct the water-jet on the base of the fire and move it from side to side till the fire is extinguished.

2. **Metals, comes under which category of fire?**

- (a) Category B (b) Category A
(c) Category D (d) Category C

RRB ALP Mechanic Diesel 21/01/2019 Shift-III

Ans. (c) : Metals, comes under category D of fire.

Fir class	Description	Fire extinguisher
Class A	• Carbonaceous fire (wood, paper, coal, jute etc.)	• Water, sand, soda acid F.E.
Class B	• Liquid fire (petrol, diesel kerosene, mobile oil etc.)	• CO ₂ and Halon type F.E.
Class C	• Gas fire (L.P.G. GNG, propane butane etc)	• CO ₂ and Holon type F.E.
Class D	• Electric fire or metallic fire.	• C.T.C. F.E. and CO ₂ F.E.

3. **Oily surface of workshop is cleaned by :**

- (a) Wood shavings and sand
(b) Washing by water
(c) Sprinkling carbon dioxide
(d) Cotton vest

RRB ALP Mechanic Diesel 23/01/2019 Shift-II

ISRO Technician-B Grinder 27.11.2016

Ans. (a) :

- Oily surface of workshop is cleaned by wood shavings and sand.
- While working in the workshop, the following rules should often be adopted for safety
 - (i) If grease or oil is lying on the floor of the workshop put sawdust or sand on it so that no on slips.
 - (ii) Keep inflammable substances like petrol in a separate place and do not smoke in the workshop.

4. **In a malfunction indicator lamp, green light indicates:**

- (a) a serious problem or safety issue
(b) the system needs service soon
(c) the system is operating normally
(d) the system needs to be repaired

RRB ALP Mechanic Diesel 23/01/2019 Shift-I

Ans. (c) : In a malfunction indicator lamp, symbol lights can appear in different colors.

Red-Indicates a potentially serious problem or safety issue.

Yellow/Orange-Something needs to be serviced or repaired soon.

Green/blue-Indicates that your system is operating normally.

5. **Which colours are used on the signs for firefighting equipment?**

- (a) Black pictogram on a yellow background
(b) White pictogram on a green background
(c) White pictogram on a red background
(d) White pictogram on a black background

RRB ALP Mechanic Diesel 23/01/2019 Shift-I

ISRO Technician-B Motor Mechanic 27.11.2016

Ans. (c) : Any fire safety signs that are associated with firefighting equipment is red.

The writing and pictograms on these signs are white.

6. **Flammable liquids comes under which class of fire?**

- (a) Class A (b) Class B
(c) Class C (d) Class D

RRB ALP Mechanic Diesel 21/01/2019 Shift-I

Ans. (b) : Flammable liquid comes under the class of B of fire.

Class-A – Carboneous fire

Class-B – Flammable liquids

Class-C – Gaseous fire

Class-D – Electrical fire/Metallic fire

7. **Which fire extinguisher is suitable for a live electrical fire?**

- (a) Halon (FE) (b) Water filled (FE)
(c) Foam (FE) (d) Liquefied chemical

RRB ALP Mechanic Diesel 21/01/2019 Shift-I

Ans. (a) : Live electrical fire is the category of class 'D' type fire.

- Halon (FE) type extinguisher is a C.T.C. fire extinguisher. It is suitable mostly for a live electrical fire or metallic fire.
- This type extinguisher is also used to extinguishes for all type fires.

Types of fire	Used material/ Device to extinguish	Class of fire
Carboneous fire	Water, sand, soil etc.	Class-A
Oily or liquid fire	Foam (FE), CO ₂ extinguisher etc.	Class-B
Gasious fire	CO ₂ , Halon	Class-C
Electrical fire	Halon or CTC extinguisher	Class-D

8. If a worker suffers an electric shock–

- (a) Be given alcoholic drinks
- (b) Be given cold drinks
- (c) Asked to walk
- (d) Be kept warm and covered

RRB ALP Allahabad 09.12.2007
ISRO Technician-B Plumber 27.11.2016

Ans : (d) If a worker suffers an electric shock then he kept warm and covered.

9. Which type of indicator is shown in figure?



- (a) Informative symbol
- (b) Mandatory symbol
- (c) Prohibitory symbol
- (d) Warning symbol

RSMSSB Jr. Inst. Mechanic Diesel 23.12.2019

Ans. (d) : Warning symbol is shown in figure.

Warning signs–

- These signs are used to give warnings related to any danger, such as electric shocks, fear of fire etc.
- They are triangular in shape.
- Their surface area is yellow and the safety sign and border is coloured black.

10. Which of the following pairs is correct for Energy conservation opportunities?

- (a) Class A-Major Energy Conservation Opportunities
- (b) Class B-Medium Energy Conservation Opportunities
- (c) Class C-Minor Energy Conservation Opportunities
- (d) All of these

RSMSSB Jr. Inst. Mechanic Diesel 23.12.2019
ISRO Technician-B Turner 22.11.2016

Ans. (b) : Class B medium energy conservation opportunities.

Class 'B' type of fire– Fire in a flammable fluid or combustible solid. CO₂, foam and powder is used to extinguish type of fire.

11. Oily floor of the diesel workshop should be cleaned by using _____.

- (a) Sand
- (b) Water
- (c) Carbon-di-oxide
- (d) None of the above

MP ITI T.O. Mechanic Diesel 08.11.2016
NCVT 2016

Ans. (a) : Oily floor of the diesel workshop should be cleaned by using sand.

12. Which is the motive of occupational health and safety?

- (a) Decrease employed morale
- (b) Decreasing the quality
- (c) Reducing absentism
- (d) Minimising productivity

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (c) : Reducing absentism is the motive of occupational health and safety.

- The objective of occupational safety and health is to ensure the welfare, health and safety of workers employed in occupational work. Safe guarding workers from physical and mental harm at the workplace is also a function of occupational safety.

13. What type of safety covers the wearing of safety shoes in workshops?

- (a) General safety
- (b) Personal safety
- (c) Machine safety
- (d) Occupational safety

NCVT Mechanic Diesel 01.11.2019 Shift-II
DMRC (Maintainer) Fitter (Evening) 15.02.2017

Ans. (b) : Personal safety covers the wearing of safety shoes in workshops.

Safety– Safety means to protect oneself and other colleagues from any accidents. Different safety practices and standards are used in workshops to prevent accidents.

Types of safety–

1. Self- safety/personal safety
2. General safety
3. Safety of machines.

14. Which is the occupational mechanical hazard ?

- (a) Sickness
- (b) Current leakage
- (c) Unguarded machinery
- (d) Wrong layout of machinery

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (c) : Mechanical hazard–

- Unguarded machinery
- No fencing
- No safety device
- No control device etc.

15. Which of the following statement regarding additives is incorrect?

- (a) Oxidizing inhibitors are used to prevent the oxidation of lubricants
- (b) Detergent depressor is used to remove & to loose the deposits caused by dirt
- (c) Antioxidants are used to prevent forming of oil
- (d) Pour point depressors are used to lower the temperature at which oil becomes too thick to flow

ISRO Technician-B Carpenter 27.11.2016

Ans : (c) Adding, Antioxidants are used to prevent forming of oil it is incorrect.

- Oxidizing inhibitors are used to prevent the oxidation of lubricants.
- Detergent depressor is used to removes to loose the deposit caused by dirt.

For additive, pour point depressors are used to lower the temperature at which oil becomes too thick to flow.

16. The preventive schedule of an engine which is checked after every 1500 hours of used is called :

- (a) Series A
- (b) Series C
- (c) Series D
- (d) Series B

ISRO Technician-B Fitter 20.11.2016

Ans : (b) The preventive schedule of an engine which is checked after every 1500 hours of used is called series C.

17. Which fire extinguisher used for flammable liquid fires? ****

- (a) Halon extinguisher
- (b) dry powder extinguisher
- (c) CTC extinguisher
- (d) Water extinguisher

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (b) : Dry powder extinguisher used for flammable liquid fires and foam extinguisher are most suitable.

18. Which type of personal protection recommended to handle loads with rough surfaces and pointed projections?

- (a) Paper gloves
- (b) Rubber gloves
- (c) Leather gloves
- (d) Polythene gloves

NCVT Mechanic Diesel 01.11.2019 Shift-II

DMRC (Maintainer) Fitter (Morning) 15.02.2017

Ans. (c) : Leather gloves recommended to handle loads with rough surfaces and pointed projections.

19. More harmful in place of harmful?

- (a) Oxygen
- (b) Water vapour
- (c) Carbon dioxide
- (d) Carbon mono oxide

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (d) : Carbon mono oxide is more harmful in place of harmful.

20. Which device is used to remove toxic waste?

- (a) Water wash
- (b) incinerators
- (c) Compressed air
- (d) Vacuum cleaner

NSQF Mechanic Diesel 2020

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans.(b):Incinerators device is used to remove toxic waste.

21. What is the name of safety device?



- (a) Goggle
- (b) Hand gloves
- (c) Hand screen
- (d) Helmet screen

NCVT Mechanic Diesel 01.11.2019 Shift-II

DMRC (Maintainer) Fitter 20.07.2014

Ans. (a) : In given figure, goggle is the name of safety device.

22. Which distance is known as wheel base of the vehicle?

- (a) Centre to centre distance between front wheels
- (b) Centre to centre distance between rear wheels
- (c) Centre to centre distance between front and rear wheel
- (d) End to end distance between front and rear wheels

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (c) : Wheel base of the vehicle is centre to centre distance between front and rear wheel.

23. What is first aid?

- (a) It is the emergency medical treatment
- (b) It is an immediate life saving treatment
- (c) It is the intensive medical treatment
- (d) It is the rule to assessing the treatment

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (b) : First aid is an immediate life saving treatment.

24. Which class of fire involves liquified gases?

- (a) Class A
- (b) Class B
- (c) Class C
- (d) Class D

NCVT Mechanic Diesel 01.11.2019 Shift-II

DMRC (Maintainer) Fitter 24.12.2006

Ans. (c) : Class 'C' type of fire– Fire in a gas or a burning gas is classified as 'C' type of fire. This type of fire should be extinguished carefully because there is always a danger of blast or sudden spreading of fire. A dry powder fire extinguisher is used to extinguish this type of fire.

25. Which fire extinguisher suitable for class "C" fire?

- (a) Foam filled extinguisher
- (b) Water filled extinguisher
- (c) Dry powder fire extinguisher
- (d) Carbon-di-oxide fire extinguisher

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (c) : Dry powder fire extinguisher suitable for class 'C' fire.

26. Which factor isolate the fire from oxygen by blanketing ?

- (a) Cooling
- (b) starving
- (c) Misfiring
- (d) Smothering

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (d) : Smothering is the method of extinguishing the fire by removing the oxygen with blanketing fire with foam, sand etc.

27. Which class of fire involves wood?

- (a) Class 'A' fire
- (b) Class 'B' fire
- (c) Class 'C' fire
- (d) Class 'D' fire

NCVT Mechanic Diesel 01.11.2019 Shift-II

BMRC Maintainer Fitter 2016

Ans. (a) : Class 'A' type of fire– Fire caught on wood, paper, clothes and hard metals is classified as 'A' type of fire.

- To extinguish this type of fire, we first direct the water-jet on the base of fire and move it from side to side till the fire is extinguished.

28. How the waste oil is disposed?

- (a) Hand over back to the customer
- (b) Throw the removed oil in the drain
- (c) Keep in small containers in remote corners
- (d) Collect waste oil container and dispose to register vendors?

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (d) : Collect waste oil container and dispose the register vendors.

29. Which type of energy to minimize the waste without affecting production?

- (a) Utilization of energy
- (b) Modification of energy
- (c) Conservation of energy
- (d) Manipulation of energy

NCVT Mechanic Diesel 01.11.2019 Shift-II

LMRC (Maintainer) Fitter 16.03.2016

Ans. (c) : Conservation of energy to minimize the waste without affecting production.

30. What type of energy reduce consumption by replaces old bulb with new LED?

- (a) Utilization of energy
- (b) Modification of energy
- (c) Manipulation of energy
- (d) Conservation of energy

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (d) : Conservation of energy reduce consumption by replaces old bulb with new LED.

31. Which is the major energy conservation opportunities?

- (a) Stopping of leakage
- (b) Replacement machineries
- (c) Replacement of house hold appliance
- (d) Lap in house keeping

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (b) : Replacement machineries is the major energy conservation opportunities.

32. Dressing and bandages are used to

- (a) Reduce the victim s pain.
- (b) Reduce internal bleeding.
- (c) Help control bleeding and prevent infection
- (d) Make is easier to take the victim to the hospital

NCVT NIMI Mechanic Diesel 2019
Noida Metro Maintainer Fitter 2017

Ans. (c) : Dressing and bandages are used to help control bleeding and prevent infection.

33. is best suited to extinguishing oil or flammable liquid fire?

- (a) Foam
- (b) Water
- (c) Dry chemicals
- (d) Soda acid

NCVT NIMI Mechanic Diesel 2019

Ans. (a) : Foam is the best suited to extinguishing oil or flammable liquid fire. They should not be used for extinguishing the fire has two containers, external and internal.

34. Which of these is correct about energy conversion in an engine?

- (a) Chemical energy to electrical energy
- (b) Electrical energy to kinetic energy
- (c) Chemical energy to kinetic energy
- (d) Electrical energy to heat energy

NCVT NIMI Mechanic Diesel 2019

Ans. (c) : The energy stored within the fuel is in the form of chemical energy. The engine of a car works by burning of fuel. If burns the fuel and produces mechanical energy (Kinetic energy + potential energy)
Energy conversion process–

Chemical energy $\xrightarrow{\text{Combustion}}$ heat energy
 $\xrightarrow{\text{machine}}$ mechanical energy $\xrightarrow{\text{Generator}}$ electrical energy.

35. Seiton under 5S, reduces all these, except..... ?

- (a) Productivity
- (b) Excess motion
- (c) Human frustration
- (d) Time wasted in searching

NCVT NIMI Mechanic Diesel 2019
DRDO Fitter 2016

Ans. (a) : Seiton under 5S, reduces all these except productivity.

5S is systematic approach to organize the work area, that uses the 5 Japanese words : Seirii, Seiton, Seiso, Seiketsu and Shitsuke.

36. What phase of 5S is concerned with colour coding of tools?

- (a) Sort
- (b) Set in Order
- (c) Shine
- (d) Standardize

NCVT NIMI Mechanic Diesel 2019

Ans. (d) : Standardize of 5S is concerned with colour coding of tools.

Seiketsu (Standardize)–

- (i) Maintain high standards of cleaning or house keeping.
- (ii) Maintain everything in order.

37. The tool used to show movement of product is

- (a) Histogram
- (b) Control Chart
- (c) Process Flow Chart
- (d) Scatter Diagram

NCVT NIMI Mechanic Diesel 2019
DRDO Turner 2011

Ans. (c) : The tool used to show movement of product is process flow chart.

38. Isolate the fire from the supply of oxygen by blanketing is called :

- (a) Starving
- (b) Smothering
- (c) Cooling
- (d) Extinguishing

KPSC Jr. Inst. Mechanic Diesel 26.09.2018

Ans. (b) : Isolate the fire from the supply of oxygen by blanketing is called smothering.

39. What is the effect of air borne dust in workshop?

- (a) Diarrhoea
- (b) Dehydration
- (c) Throat infection
- (d) Rise in blood pressure

NSQF Mechanic Diesel 2020

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (c) : The effect of air borne dust is throat infection in workshop.

40. If an accident occur while working?

- (a) Stand with public at accident place
- (b) Run away from the accident spot
- (c) Inform your superior regarding an accident
- (d) Run away from accident site

HPSSC Mechanic Diesel (Instructor) 2018
DRDO Machinist 2016

Ans. (c) : If a accident occur while working then immediately inform your superior regarding on accident.

41. Fire on electric wire can be controlled by?

- (a) Put water on it
- (b) C.T.C. Fire Extinguisher
- (c) Sand
- (d) Foam fire extinguisher

HPSSC Mechanic Diesel (Instructor) 2018

Ans. (b) : Fire on electric wire can be controlled by C.T.C. fire extinguisher.

A cylinder made of brass is filled with a liquid substance of carbon tetrachloride and bromo chloride fluoro methane (BCF).

42. Which type of signs are shown in following Fig.



- (a) Mandatory signs (b) Warning signs
(c) Information signs (d) Prohibition signs

RRB ALP Bangalore 25.01.2004
DRDO Motor Mechanic 2016

Ans. (d) : Prohibition signs:- prohibition signs indicate an action or behavior that is not permitted in the workplace. The signs are shown as a red circle with a red slash over a black icon of the action. The test is black on a white background.



43. Which type of signs are shown in following Fig.



- (a) Mandatory signs (b) Warning signs
(c) Information signs (d) Prohibition signs

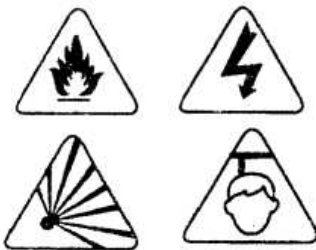
RRB ALP Bangalore 25.01.2004

Ans. (b) : Warning Signs:-

■ These signs are used to warn the road users at sufficient distance in advance about the impending road condition.

■ Warning signs are also known as cautionary signs.

■ Shape → Triangle



44. Which type of signs are shown in following Fig.?



- (a) Mandatory signs (b) Warning signs
(c) Information signs (d) Prohibition signs

RRB ALP Bangalore 08.07.2007
DRDO Mechanic Diesel 2016

Ans. (a) : Mandatory Signs-

■ The Regulatory or mandatory signs are used to inform the road user of certain laws and regulations to provide safety and Free flow to traffic

■ Shop -circular



45. Which type of signs are shown in following Fig.?



- (a) Mandatory signs (b) Warning signs
(c) Information signs (d) Prohibition signs

RRB ALP Bangalore 15.07.2012

Ans. (c) : Information signs-

■ Informatory signs are provided to guide the road user about the routes, destination, and to provide information that makes travel easier safe- and pleasant

■ Shape- Rectangle



46. Identify the sign shown in following Fig.



Fig 1.5

- (a) Toxic Hazard (b) Risk of fire
(c) Over Head Load (d) Risk of Laser Beam

RRB ALP Bhopal 06.06.2010

Indian Ordnance Factory Fitter 10.09.2017

Ans. (d) : laser beam safety- Laser beam safety is the safe design, use and implementation of laser to minimize the risk of laser accident, especially those involving eye injuries.



Fig 1.5

47. Identify the signs shown in following Fig. 1.6

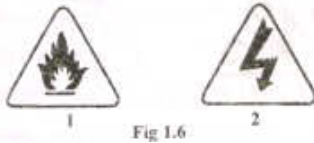


Fig 1.6

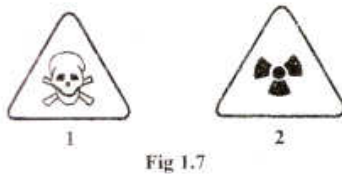
- (a) 1. Risk of fire and
2. Risk of Electric shock
- (b) 1. Over Head Load and
2. Risk of Laser Beam
- (c) 1. Over Head Load and
2. Risk of Electric shock
- (d) 1. Risk of Leaser Beam and
2. Risk of Fire

RRB ALP Bhubaneswar 14.06.2009

Ans. (a) : The sign shown in the figure 1.6 is (1) Risk of fire and (2) Risk of Electric shock



48. Identify the signs shown in following Fig. 1.7



- (a) 1. Risk of fire and
2. Risk of electric shock
- (b) 1. Over Head Load and
2. Risk of leaser beam
- (c) 1. Toxic Hazard and
2. Risk of ionizing radiation
- (d) 1. Risk of laser beam and
2. Risk of fire

**RRB ALP Bhubaneswar 15.07.2012
Indian Ordnance Factory 2016**

Ans. (c) : The signs shown in following Fig.1.7 is
(1) Risk of laser beam
(2) Risk of fire.

49. For Fragile Roof which of the following sign is used



- (a) A
- (b) B
- (c) C
- (d) D

RRB ALP Bilaspur 15.07.2012

Ans. (b) : For fragile Roof, Danger Fragile roof signs is used.



Danger Fragile roof.

50. For Smoking is Prohibited which of the following sign is used



- (a) A
- (b) B
- (c) C
- (d) D

RRB ALP Chandigarh 14.09.2008

Indian Ordnance Factory (Itarsi) 08.05.2016

Ans. (d) : For Smoking prohibited, No Smoking sign is used.



51. Identify the sign shown in following



- (a) Toxic Hazard
- (b) Risk of fire
- (c) Wear Hand Protection
- (d) Risk of Laser Beam

RRB ALP Chandigarh 15.07.2012

Ans. (c) : The sign shown in the following fig-1.10 is wear hand protection.



52. Like a wheel from starting to present in Industrial revolution development which of the following is included?

- (a) Wheel
- (b) Automisation
- (c) Computerisation
- (d) All (a), (b), (c)

RRB ALP Chandigarh 25.05.2003

Indian Ordnance Factory 2015

Ans. (b) : Chemical hazard- chemical hazards are a subtypes of occupational hazards that involves a wide variety of chemicals exposure to chemicals in the workplace can cause acute or long-term detriment at health effects.

64. What type of gloves is used to avoid cuts and abrasion during material handing ?

- (a) Rubber gloves
- (b) Leather gloves
- (c) Cotton gloves
- (d) Polythene thin gloves

**RRB ALP Kolkata 06.02.2005
SAIL Bokaro Steel Plant 2016**

Ans. (b) : Leather gloves is used to avoid cuts and abrasion during material handling .

65. Which of these is a biological hazard ?

- (a) Smoking
- (b) Sickness
- (c) Infection
- (d) Poor discipline

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (c) : Biological or Biohazard:- A biohazard is a biological substances that posses a threat to the health of living organisms, primarily humans. This could include a sample of a microorganisms virus, or toxin that can adversely effect human health.

66. What does the following sign indicate?



- (a) Risk of fire
- (b) Laser beam
- (c) Toxic hazard
- (d) Risk of electric shock

RRB ALP Kolkata 16.07.2006

Ans. (d) : Risk of electric shock



67. A person coming in contact with live electric wire should be removed from live supply using a :

- (a) Piece of dry timber
- (b) Piece of wet timber
- (c) Metallic rod
- (d) Scaffold rod

**RRB ALP Kolkata 2014
SAIL Durgapur Steel Plant 05/09/2014**

Ans. (a) : A person coming in contact with live electric wire should be removed form live supply using a piece of dry timber.

68. Which fire extinguisher is used for flammable liquid fires ?

- (a) Halon extinguisher
- (b) Dry powder extinguisher
- (c) CTC extinguisher
- (d) Water extinguisher

RRB ALP Kolkata 29.09.2002

Ans. (b) : Dry powder extinguisher is used for flammable liquid fires.

Dry powder extinguisher:- A dry powder fire extinguisher choice since it can be used an almost all fire types. that being said, it is not recommended to use a dry powder fire extinguisher in an enclosed space.

69. Which of these is a toxic in an automobile workshop ?

- (a) Old bearings
- (b) Paper wrappers
- (c) Used lubricants
- (d) Old washers, bolts and nuts

NCVT Mechanic Diesel 01.11.2019 Shift-II

Ans. (c) : Lubricants used is a toxic in an automobile workshop.

70. A person faints due to suffocation, the first aid to be given is:

- (a) Give him a warm drink
- (b) Sprinkle cold water on his face
- (c) Place him in a well-ventilated location
- (d) Give him artificial respiration

RRB ALP Malda 16.07.2006

VIZAAG Steel Fitter 2015

Ans. (c) : A person faints due to suffocation the first aid to be give is place him in a well- ventilated location

71. What does the following mandatory sing indicate ?



- (a) Save water
- (b) Wash hands
- (c) Canteen zone
- (d) Drinking water

RRB ALP Mumbai 03.06.2001

Ans. (b) : Hand washing mandatory signs indicate.



72. Which equipment is used in vehicle service station to lift a vehicle for water wash ?

- (a) Hoist
- (b) Crane
- (c) Stand
- (d) Screw jack

RRB ALP Mumbai 05.06.2005

Ans. (a) : Hoist equipment is used in vehicle service station to lift a vehicle for water wash.

Lift- This is used to lift a vehicle from the ground level. It is also called hoist . It is used when there is not enough space in a workshop to dig a hole. It runs on electricity. It works on the principle of self. locking screw. mainly three lifts are used in an automotive wok shop.

73. Which equipment is used to lift and support a vehicle before work underneath it can be safely undertaken?

- (a) Stand
- (b) Sling chain
- (c) Lifting crane
- (d) Hydraulic jack

RRB ALP Mumbai 14.06.2009

NTPC Fitter 2014

Ans. (a) : Stand is a equipment, it is used to lift and support a vehicle before work underneath it can be safely undertaken.