

**BILL OF MATERIAL REQUIRED FOR EACH TRAINEE FOR ALL INDIA TRADE
TEST OF CRAFTSMEN UNDER CRAFTSMEN TRAINING SCHEME
(SEMESTER PATTERN) FOR ENGINEERING/ NON- ENGINEERING TRADES
TO BE HELD IN JANUARY - 2019
SEMESTER - III**

ENGINEERING/ NON- ENGINEERING TRADES

030. ATTENDANT OPERATOR (CHEMICAL PLANT)

- i) Digital viscometer, Organic water sample, Toluene.
- ii) Rotameter
- iii) Packed distillation column
- iv) Plate type heat exchanger

031/217. DRAUGHTSMAN (CIVIL)

- i) Drawing sheet (Imperial size) : 01 No.
- ii) White paper : 02 Nos.
- iii) Mini Drafter, Drawing instruments, Pencils, Eraser
& Emery paper : As required

031/217. DRAUGHTSMAN (CIVIL) (NSQF)

- i) Desktop equipped with Auto cad software
- ii) Printer & paper

032/224. DRAUGHTSMAN (MECHANICAL)

- i) Desktop equipped with Auto cad software
- ii) Printer & paper

033/231. ELECTRICIAN (NSQF)

- i) Experimental set up of DC machine with required meters, starter, switches etc.
- ii) Experimental set up of Slip-ring induction motor with required meters, starter, switches etc.
- iii) Experimental blocked rotor test set up of three phase squirrel cage induction motor with required meters, starter, switches etc.
- iv) Experimental set up of capacitor run motor with required meters, switches etc.
- v) Experimental set up of parallel operation 3-phase of alternators with required meters, lamps, switches etc.
- vi) Connecting wires
- vii) MI type voltmeter (0-250V)
- viii) MI type Ammeter (0-5A)
- ix) Dynamometer type wattmeter
- x) Wire Cutter and Stripper
- xi) Variac (0-270 V)
- xii) Required AC supply: single phase and three phase
- xiii) Required DC supply
- xiv) Tester

033/231. ELECTRICIAN

- i) 3-phase squirrel cage induction motor with star-delta starter. : 1 No.
- ii) Single phase 1 H.P. capacitor type motor : 1 No.
- iii) 6 volt decorating lamps : 40 Nos
- iv) Single core PVC wire for series lamps connections : 1 roll
- v) 3-phase alternator with load : 1 No.
- vi) Wattmeter (0-1500 watt) : 01 No.

034/219 ELECTRONICS MECHANIC

- i) Transistor BC108, Resistors, Capacitors, AFO, CRO, Diode 0A79, Multimeter, Regulated power supply, Breadboard and connecting wires.
- ii) RTD sensor, Precise thermometer, digital multimeters
- iii) Microcontroller 8051 trainee kit
- iv) LVDT kit, Multimeter
- v) AM modulation and Demodulation trainer kit

034/219 ELECTRONICS MECHANIC (NSQF)

- i) Digital Storage Oscilloscope
- ii) Function generator
- iii) Printer
- iv) Printed Circuit Board with soldered joints
- v) Accessories for soldering like solder iron, flux, stand, wire etc.
- vi) Panel of electrical motor control circuit
- vii) ELCB
- viii) CPU cabinet of PC with various connector and cable
- ix) Network switch
- x) Wire needed to prepare cross over cable
- xi) FM trainer kit
- xii) Multimeter
- xiii) Tester
- xiv) Connecting wires
- xv) Required DC/AC supply

035/233. ELECTROPLATER

- i) Tool kit, Multimeter, rectifier set 16-20 volts DC with an output of 500 ampere, lead lined immersion electric heater 1kW, 10/12" length, chromium plating tank with SS stand capacity 125 ltr., PP tank with SS stand for drag out, swilling, hot water dipping, lead antimony anodes, bus bars, emery paper, brass bristle wire brush, copper rods for electrodes
- ii) Acid dipping bath, Cyanide dipping bath, swilling bath, hot water bath, drag out bath cadmium plating tank with complete setup, passivation bath, vapour degreaser, centrifugal dryer, brass article, plating jig (copper), sodium cyanide, sulphuric acid, nitric acid.
- iii) Multimeter, rectifier set 16-20 volts DC with an output of 500 ampere., silica cased immersion electric heater 1kW, 10/12" length, acid zinc plating tank, capacity 125 ltr., passivation tank, PP tank with SS stand for drag out, swilling, hot water dipping, zinc anodes, bus bars, emery paper, brass bristle wire brush, copper rods for electrodes.

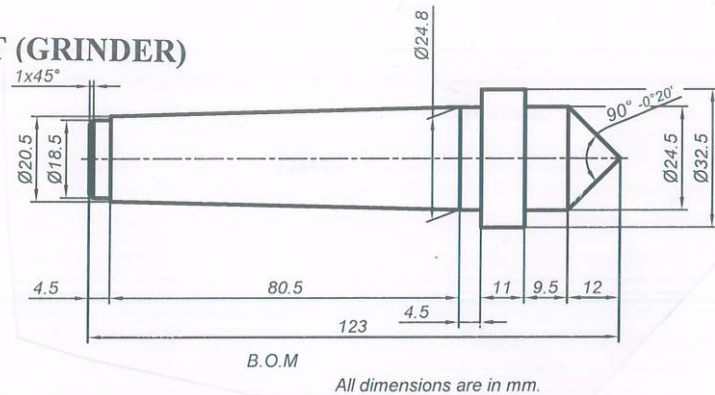
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- 036/227. FITTER**
i) Mild steel flat 100 mm x 50 mm x 8 mm : 1 No.
- 036/227. FITTER (NSQF)**
Mild steel flat 85 mm x 65 mm x 10 mm : 1 No.
- 037. INSTRUMENT MECHANIC**
i) a. Centrifugal Tachometer : 01 No
b. Electrical Tachometer : 01 No
c. Digital Tachometer : 01 No
(or any three of different type)
ii) Rotameter & its set-up : 01 No
iii) Load all experimental set-up/trainer kit : 01 Set
iv) Experimental set-up for pressure measurement using pressure cells. : 01 Set
- 038. INSTRUMENT MECHANIC (CHEMICAL PLANT)**
i) Voltmeter, ammeter, wattmeter, lamp load
ii) An Orificemeter fitted across a pipeline leading to a collecting tank, stop Watch, U-Tube manometer etc.
iii) Mercury thermometer, thermistor or any other thermometer to be calibrated, boiling tube containing glycerol, heat source, beaker of water, ohmmeter/multimeter.
iv) Deadweight tester, Bourdon pressure gauge, four 1 kg weights, two 0.5 kg weights, one 0.2 kg weight
- 039/220. ITESM/ICTSM**
i) DMP with a faulty ribbon, new ribbon. : 01 No
ii) Laser printer with faulty drum, new drum, toner : 01 No
iii) Computer system, modem, internet connection line. : 01 No
iv) Computer system, Linux CD : 01 No
v) LCD projector, computer system. : 01 No
vi) Computer system with problem in windows. : 01 No
vii) Faulty computer mouse, new roller, sensing element. : 01 No
- 040. LABORATORY ASSISTANT (CHEMICAL PLANT)**
i) Vegetable oil or olive oil or coconut oil or rice bran oil, potassium hydroxide or sodium hydroxide, additive for colour and scent.
ii) Evaporating dishes (pyrex, porcelain or platinum), oven, desiccators, analytical balance Whatman filter paper no. 44, water bath, dish tongs, gooch crucibles, filter, forceps.
iii) Ferrous sulphate, Ammonium sulphate, Dil. Sulphuric acid, Ethyl alcohol, Distilled water, Beakers, China dish, Funnel, Glass rod, Tripod stand, Wire gauze, Burner, Wash bottle, Measuring jar, Electronic balance
- 041/234. LIFT MECHANIC/LIFT & ESCALATOR MECHANIC**
i) Practical Drill Machine, 6mm & 12 mm capacity : As required
ii) Micrometer screw gauge or vernier calipers : 01 No
iii) Lead Acid Battery, Multimeter, Hydrometer : 01 No
iv) Soft iron core and wires to Wound over it to make an electromagnet : 01 No

- v) 240V/12V step down transformer (Centre tap 6-0-6) : 01 No
- vi) Two diodes : 01 No
- vii) Carbon resistors : As required
- viii) DC Voltmeter : 01 No
- ix) DC Ammeter (Milliammeter) : 01 No

042/222. MACHINIST

- i) MS Flat: 100 mm x 100 mm x 10 mm : 01 Nos.
- ii) MS Flat: 55 mm x 40 mm x 10 mm : 01 Nos.

043/223. MACHINIST (GRINDER)**044. MAINTENANCE MECHANIC (CHEMICAL PLANT)**

- i) Screw driver, Plier.
- ii) Centrifugal pump back pull out type with motor and base plate.
- iii) Mechanical seal, multiple spring, single spring, bellows, seal.
- iv) Ball valve

045. MARINE FITTER

- i) Multi Cylinder Diesel Engine
- ii) A Lead Acid Battery
- iii) Hydrometer and Cell Tester
- iv) Self-starting motor of a diesel vehicle

046. MECHANIC MINING MACHINERY ***047/216. MECHANIC AGRICULTURAL MACHINERY**

- i) Tractor in working condition
- ii) Disc plough, Rotavator
- iii) Raw materials/Consumables such as spares for disc plough, cotton waste, diesel, emery papers (fine and coarse), Hack saw blades, grease, engine oil, etc. (as per requirement)

048. MECHANIC COMPUTER HARDWARE

- i) Laser printer : 01 No
- ii) Necessary softwares OS/Recovery Softwares : As required
- iii) Additional RAM : 01 No
- iv) Antivirus Software (freeware or Licensed) : 01 No

049/273. MECHANIC CONSUMER ELECTRONIC APPLIANCES

- i) Electrical motor circuit
- ii) RTO
- iii) Data Chart

- iv) FM receiver set
- v) CRO
- vi) Connecting wires
- vii) Ammeter
- viii) Voltmeter
- ix) Diodes

050. MECHANIC CUM OPERATOR ELECTRONIC COMMUNICATION SYSTEMS

- (i) Zero PCB : 01 No
- (ii) Electronics components (resistors, diodes, ICs) : As required
- (iii) Connecting wires : As required
- (iv) Regulated power supply : As required
- (v) Soldering iron : 01 No
- (vi) Flux : As required
- (vii) Microprocessor trainer kit : 01 No
- (viii) (0-5V) DC battery : 01 No
- (ix) IC 7400 (NAND Gate) : 01 No
- (x) IC 7402 (NOR Gate) : 01 No
- (xi) IC 7408 (AND Gate) : 01 No
- (xii) Digital IC Trainer kit : 01 No
- (xiii) Function generator : 01 No
- (xiv) CRO : 01 No
- (xv) Transistor BC108 : 01 No
- (xiv) Resistors : As required
- (xvii) Capacitors : As required
- (xviii) Diode 0A79 : 01 No
- (xix) Multimeter : 01 No
- (xx) Breadboard : 01 No
- (xxi) Regulated power supply : As required
- (xxii) Probe and connecting wires : As required
- (xxiii) Data communication trainer kit with data Communication devices : 01 No
- (xxiv) Patch cords : As required
- (xxv) Parallel port cables : As required
- (xxvi) Main power cord : As required

051. MECHANIC INDUSTRIAL ELECTRONICS

- (i) Thermocouple : 01 No
- (ii) Resistors : As required
- (iii) Breadboard : 01 No
- (iv) RTD : 01 No
- (v) Connecting wires : As required
- (vi) AM Trainer's kit : 01 No
- (vii) FM Trainer's kit : 01 No
- (viii) Oscilloscope : 01 No
- (ix) Inductive type proximity sensor : 01 No
- (x) Metal object : 01 No
- (xi) LED : As required
- (xii) Power Supply : As required

- (xiii) Inductive type proximity sensor : 01 No
 (xiv) Transparent Glass : 01 No
 (xv) PIC Microcontroller kit. : 01 No
- 052/225. MECHANIC MACHINE TOOL MAINTENANCE**
 i) MS sheets size 100 mm x 50 mm x 10 mm : 02 Nos.
 ii) Oxy – Acetylene gas welding set
 iii) Bench Grinder as available
- 053. MECHANIC MECHATRONICS**
 i) Grinding Machine
 ii) Other materials as per requirement.
- 054. MECHANIC MEDICAL ELECTRONICS**
 i) Blood gas analyser : 01 No
 ii) Bread board : 01 No
 iii) Pressure transducer : 01 No
 iv) 8085 microprocessor trainer kit : 01 No
 v) Different types of cables & connectors, connecting wires : As required
 vi) Faulty calorimeter : 01 No
 vii) Function generator : 01 No
 viii) Multimeter : 01 No
 ix) CRO : 01 No
- 055/215. MECHANIC MOTOR VEHICLE**
 i) HMV/MTP fitted with propeller shaft
 ii) Universal joint
 iii) Grease
 iv) Needle Bearings
 v) Cleaning Brush
 vi) Old Dhoti
 vii) Emery paper
 viii) Diesel
- 056/218. MECHANIC REFRIGERATION AND AIR CONDITIONING**
 i) Water circulating pump 0.5 H.P. : 01 No
 ii) Other materials as per requirement.
- 057. MECHANIC RADIO & TELEVISION**
 i) Connecting wire
 ii) Trainer kit FM Transmitter
 iii) Home theatre System
 iv) CRO
 v) Multimeter
- 058/226. OPERATOR ADVANCE MACHINE TOOL**
 i) Machine tool - CNC Turing centre
 ii) Cutting tool - longitudinal turning
 iii) Measuring tools - Steel rule, outside caliper, vernier caliper, micrometer
 iv) Dead or line centres
 v) MS Round ϕ 45mm x 80 mm : 01 No

059. PAINTER GENERAL

- i) Putty, primer, sandpaper, roller
- ii) Pre-mixed filler canvas drop cloths, bucket of soapy water, sponge, bleach, scraper, sand paper 180 or 240 grade, painter masking tape, gap sealant
- iii) Wire brush, palm sander and pads, chip brush, sandpaper or sanding block, spray gun, tack cloth, safety gear, drop cloths, spray primer for metal, spray paint for metal,
- iv) Metal chair : 01 No.

060. RADIOLOGY TECHNICIAN

- i) Tools and chemicals required for exposure on operation theatre.
- ii) Liquid mediums used in different preparations in x-ray techniques.
- iii) Equipments and materials required in x-ray dark room setting.
- iv) Chemicals and accessories required
- v) Contrast medium

061/235. SPINNING TECHNICIAN***062. SURVEYOR**

- i) Arrows : 10 Nos
- ii) Ranging rods : 6 Nos
- iii) Measuring tape : 1 No
- iv) Theodolite with stand : 1 No
- v) Drawing sheet : 2 Nos
- vi) Dumpy level : 1
- vii) Levelling staff : 1

063/236. TEXTILE MECHATRONICS

- i) Rapiet loom in working condition
- ii) Knitting machine in working condition
- iii) Winding machine in working condition

064/237. TEXTILE WET PROCESSING TECHNICIAN

- i) Analytical Balance : 01 No.
- ii) Water bath : 01 No.
- iii) Burette 50 ml capacity : 01 No.
- iv) Conical flasks 250 ml : 01 No.
- v) Cotton fabric - 0.25 m
- vi) Polyester fabric – 0.25 m
- vii) Direct dies and disperse dies

065/228. TOOL AND DIE MAKER (DIES AND MOULDS)

- MS Flat : 75 mm x 75 mm x 12 mm : 01 No.

066/229. TOOL AND DIE MAKER (PRESS TOOLS, JIGS & FIXTURES)

- MS Round : ϕ 110 x 25 mm : 01 No.

067/221. TURNER

- MS Round ϕ 40 x 165 mm : 01 No.

Contd.....8/-

- 067/221. TURNER (NSQF)**
 i) ϕ 46 x 110 mm : 01 No.
 ii) ϕ 55 x 80 mm : 01 No.
- 068. VESSEL NAVIGATOR***
- 069/ 238. WEAVING TECHNICIAN**
 i) Power loom in complete running condition
 ii) Drawing board
 iii) Graph paper
 iv) Measuring scale
 v) Divider
 vi) Pencil
- 070/232. WIREMAN**
 i) D.C Generator : 01 No
 ii) Single phase AC motor : 01 No
 iii) Electric Heater 230 V AC type : 01 No
 iv) AC wattmeter & ammeter : 01 No each
 v) 3-phase motor : 01 No
 vi) PVC conduit pipe : As per set-up
 vii) PVC cable single core type : As per set-up
 viii) Simple DC power supply (with two defects) : 01 No.
 ix) Multimeter : 01 No.
 x) Spares to repair the power supply : Associated
- 265. TECHNICIAN POWER ELECTRONICS SYSTEMS**
 i) a. Digital storage Oscilloscope (DSO) : 1 No.
 b. Printer compatible with DSO : 1 No.
 c. Function generator : 1 No.
 ii) a. Defective single-phase UPS and batteries with 3 different faults : 1 set
 b. CRO : 1 No.
 c. Digital Multi-meter : 1 No.
 d. Soldering Iron, wires, cables and tools etc. : Assorted
 e. Electrical loads and spares : Assorted
 iii) Power Electronics Trainer Kit with trigger circuit : 1 No.
 iv) Programmable DC Power Supply : 1 No.
 v) Fiber optic trainer kit : 1 No.
- 275. MECHANIC AIR CONDITIONING PLANT**
 i) Package AC 7.5 Ton capacity : 1 No
 ii) Other materials as per requirement
 iii) Refrigerant R-22 : As required
- 277. INFORMATION TECHNOLOGY**
 i) Lan cable : 01 No
 ii) Hub Router : 01 No
 iii) Printer, Scanner, UPS, VDU : 01 No
 iv) Laptop : 01 No
 v) Motherboard : 01 No

284. CIVIL ENGINEERING ASSISTANT

- i) Sand : 3 kgs
- ii) Graduated cylinder : 01 No
- iii) Beaker : 01 No
- iv) Metal tray : 01 No
- v) Weighing balance : 01 No
- vi) Vicats apparatus (initial and final setting time needle and plunger) : 01 No
- vii) Cement – 5 kg.

NON-ENGINEERING TRADES**133. DENTAL LABORATORY TECHNICIAN**

- i) Maxillary cast : 02 Nos
- ii) Mandibular cast : 02 Nos
- iii) Orthodontic wires
- iv) Buccal tube
- v) Bands
- vi) Pliers
- vii) Cutters
- viii) Marker
- ix) Cold Mould Seal
- x) Cold cure acrylic (Powder & Liquid)
- xi) Carvers
- xii) Folder

134. ARCHITECTURAL DRAUGHTSMANSHIP*

Note: * All Tools, Instruments & Equipment as per standards list prescribed in the syllabus of the trade must be kept ready and in good condition.
