

**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 JULY, 2018
SEMESTER - III**

ENGINEERING TRADES

030. ATTENDANT OPERATOR (CHEMICAL PLANT)

- i) Deadweight tester
- ii) Weight, 1 Kg : 4 Nos.
- iii) Weight, 5 Kg : 2 Nos.
- iv) Weight, 0.2 Kg : 1 No.
- v) 'C' type Bourdon pressure gauge
- ii) Gate valve, spanner, packing hook. standard wrenches
- iii) Reynolds experimental arrangement, Collecting tank, Stop watch, Scale, colour dye (Potassium Paramagnet) etc.
- iv) Reciprocating compressor, expansion valve

031/217. DRAUGHTSMAN (CIVIL)

- i) Drawing sheet A1 : As required

032/224. DRAUGHTSMAN (MECHANICAL)

- i) Drawing sheet A1 : As required

033/231. ELECTRICIAN

- i) Nylon bobbin, core (CRGO, E & I type), super enameled wires, clamp and insulation paper etc. : Assorted
- ii) Transformer winding machine : 1 No.
- iii) Multi-meter : 1 No.
- iv) Electrical Machine Trainer : 1 No.

OR

- v) Set-up of any one type of AC Motor with different Loads : 1 Set
- vi) Stepper Motor set-up with controller : 1 Set

034/219 ELECTRONICS MECHANIC

- i) Experimental board
- ii) PNP and NPN Transistor
- iii) Power Supply
- iv) Mill ammeter
- v) Multimeter.
- vi) DSO
- vii) CRO
- viii) Function Generator
- ix) +5V DC power supply
- x) IC 8038

Contd....2/-

- xi) Breadboard
- xii) Connecting wires
- xiii) PCB
- xiv) Pump
- xv) Wick
- xvi) Transistor : As required
- xvii) FET : As required
- xviii) MOSFET : As required
- xix) Resistor : As required

035/233. ELECTROPLATER

- i) Cleaning tank
- ii) Chromium plating tank
- iii) Salt spray tester
- iv) Hull cell unit for chemical analysis

036/227. FITTER

- i) MS Flat 85 x 65 x 8 mm : 1 No.

037. INSTRUMENT MECHANIC

- i) Centrifugal tachometer trainer or set-up : 1 No.
- ii) Eddy current (drag cup) tachometer trainer or set-up : 1 No.
- iii) McLeod gauge trainer : 1 No.
- iv) Pilot tube flow meter trainer : 1 No.
- v) Bimetallic thermometer : 1 No.
- vi) Oil bath : 1 No.
- vii) Accessories associated with each set-up : Assorted

38. INSTRUMENT MECHANIC (CHEMICAL PLANT)

- i) C-type bourdon gauge, bellow gauge, air compressor, spanner
- ii) 'J', 'K', 'S' and 'T' types of thermocouples, digital voltmeter, candle, a container with ice bath, extension wires
- iii) Digital Multimeter, Flow Indicator / Totaliser, a) Glass Tube Rotameter Range : 200 - 2000 Lph Line Size : 25 NB Connectivity : 1/2" BSP (Female), Rotameter is connected in series with main line, Turbine type Flow Meter (Wheel Flow Meter) Input : 0 -2000 LPH Output : 4-20 mA Supply voltage : 24Volt DC Line Size : 25 NB Connectivity : 1/2" BSP (Female) Wheel Flow Meter is connected in series with main line

039/220. ITESM/ICTSM

- i) PC, Printer, Scanner, MFD, VDU
- ii) Different type of modem
- iii) LCD projector
- iv) Touch pad
- v) Internet

040. LABORATORY ASSISTANT (CHEMICAL PLANT)

- i) Apparatus: Reflux condenser, round bottom flask.
Chemicals: Nitric acid, sulphuric acid and benzene.
- ii) 100 ml beaker, wire gauge, Bunsen burner, iron stand with clamp, thermometer, tripod stand, porous plate, stirrer, spatula, crystalline substance (Naphthalene), and liquid paraffin.
- 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 and Electronic balance.

041/234. LIFT MECHANIC/LIFT & ESCALATOR MECHANIC

- i) Three phase Squirrel cage induction motor with DOL starting panel – 3 KW, 415 V
- ii) Digital AC drive trainer – 3 Phase, 2 KW
- iii) Elevator control panel suitable for 5/8 passenger lift fitted with controller and related accessories
- iv) Speed control panel having required instruments and devices along with lift motor
- v) Lift light and fan
- vi) Required tools and equipment
- vii) Lift available in lab

042/222. MACHINIST

- i) M.S pipe \varnothing 65 mm x 75 mm x 10 mm thick wall : 1 No.

043/223. MACHINIST (GRINDER)

- i) MS Block: 75 x 50 x 10 mm : 1 No.

044. MAINTENANCE MECHANIC (CHEMICAL PLANT)

- i) Personnel protective equipment : As required
- ii) Standard tool kit

045. MARINE FITTER

- i) Diesel engine in working condition : 1 No.

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

- i) All common hand tools and measuring tools used in the workshop.
- ii) One submersible pump in working condition
- iii) Raw material for servicing of a submersible pump

048. MECHANIC COMPUTER HARDWARE

- i) Laptop with related software
- ii) Windows installed PC
- iii) SATA cables

049/273. MECHANIC CONSUMER ELECTRONIC APPLIANCES

- i) Experimental kits of Modulation / Demodulation.
- ii) Fuses with fuse holders, MCB of required rating, Given motor, Multimeter, Connecting wire, Tester etc.
- iii) Different types of cables & connectors, Required tools and accessories, PC and Printer, Soldering set.
- iv) Power supply (AC and DC), DSO, Function generator.

050. MECHANIC CUM OPERATOR ELECTRONIC COMMUNICATION SYSTEMS

- i) Digital trainer kit
- ii) Required resistor, capacitor, LED, switch, diodes, transistor.
- iii) A to D trainer kit
- iv) Modulation trainer kit, CRO with connecting probes.
- v) Soldering iron with accessories.
- vi) Flip-Flop trainer kit with required ICs.
- vii) Connecting wires.

051. MECHANIC INDUSTRIAL ELECTRONICS ***052/225. MECHANIC MACHINE TOOL MAINTENANCE**

- i) Milling machine : 1 No.
- ii) M.S Plate: 150mm x 50mm x 2 mm : 2 Nos.
- iii) Gas welding kit

053. MECHANIC MECHATRONICS

- i) Tools / instruments
- ii) Trainer kit

054. MECHANIC MEDICAL ELECTRONICS

- i) 8085 Microprocessor programming kit
- ii) Instruction coding sheet
- iii) (0-5V) DC battery/230 V AC
- iv) Different type of transducers
- v) Different type of sensors
- vi) Transducer kit
- vii) CRO
- viii) Multimeter
- ix) Probe and connecting wires
- x) Different cables with connectors of the biomedical equipments
- xi) Trainer kit
- xii) Semi auto analyzer kit

055/215. MECHANIC MOTOR VEHICLE

- i) Tools / Instruments
- ii) Box spanner set
- iii) Torque wrench, Valve spring lifter
- iv) Bearing puller
- v) Feeler gauge
- vi) Tray, Cotton, Kerosene, Soap oil, Grease, Cleaning tray

056/218. MECHANIC REFRIGERATION AND AIR CONDITIONING

- i) Water cooler
- ii) Refrigerant for charging

057. MECHANIC RADIO & TELEVISION

- i) CRO
- ii) CD4007 MOS transistor array (data sheet from National Semiconductor)
- iii) 0.1 microFarad capacitors
- iv) 10 kOhm resistor Oscilloscope
- v) Multimeter
- vi) Power supplies
- vii) Function generator
- viii) Oscillator
- ix) Diodes
- x) Resistors
- xi) Fault car Audio System
- xii) Required tool kit & Accessories
- xiii) AM Transmitter kit

058/226. OPERATOR ADVANCE MACHINE TOOL

- i) M.S. Flat 75 x 65 x 22 mm : 1 No.

059. PAINTER GENERAL

- i) Emery paper : As required
- ii) Cotton cloth : As required
- iii) Primer : As required
- iv) Oil paint : As required
- v) Nail brush : 1 No.
- vi) Distemper : As required
- vii) Spray gun : 1 No.
- viii) Blue paint : As required
- ix) Thinner : As required
- x) Personnel protective equipments : As required

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 : As required
- v) Contrast medium

061/235. SPINNING TECHNICIAN

- i) Draw frame (miniature) for references
- ii) Necessary tools : As required

062. SURVEYOR

- i) Theodolite : 1 No.
- ii) Leveling staff : 1 No.
- iii) Tape : 1 No.

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063/236. TEXTILE MECHATRONICS ***064/237. TEXTILE WET PROCESSING TECHNICIAN**

- i) 100% cotton fabric : 0.25 meter
 ii) Basic / Reactive dyes

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

- i) M.S Flat: 85 x 85 x 18 mm : 3 Nos.
 ii) M.S rod: \varnothing 26 x 20 mm : 1 No
 iii) Dowel pin \varnothing 8 x 45 mm : 2 Nos.
 iv) Allen screw M6 x 20 mm : 2 Nos.
 v) Allen screw M6 x 16 mm : 1 No.

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

- i) M.S Flat : 125 x 125 x 22 mm : 1 No.
 ii) M.S Rod : \varnothing 26 mm x 80 mm : 2 Nos.

067/221. TURNER

- i) Mild Steel Bar (Fe310-0) 50 \varnothing x 120 mm length : 1 No.

068. VESSEL NAVIGATOR

- i) Tools and equipments used in Vessel repair shop
 ii) Consumable raw material and reference material used for calculating position of a Ship : As required

069/ 238. WEAVING TECHNICIAN

- i) Loom ready for weaving such that run time is approximately 40 minutes per student.
 ii) Cards to prepare Jacquard card chain of around 30 character words per students.
 iii) Functional lab as mentioned in the list enclosed with syllabus.

070/232. WIREMAN

- i) Zener diode, I.C. and Transistor : 1 No. each
 ii) Lead Acid Cell 6 V 120 AH : 1 Set
 iii) Diode 6Ampere : 4 Nos.
 iv) Multi Meter : 1 Set
 v) Main Switch Iron clad, Single phase 32 Ampere, 220V : 1 Set
 vi) D.C. Shunt Motor 5.0 H.P. : 1 No.
 vii) D.C. Shunt Motor Starter : 1 No.
 viii) 1.0 H.P., 220 V A.C. Single phase induction Motor : 1 No.
 ix) D.O.L. Starter suitable for 1.0 H.P. Single Phase Induction motor. : 1 No.
 x) XLPE Single Core Multi strand copper single core flexible wire size-1.5 mm² of 440/660 V grade. : 1 Lot
 xi) Tools & accessories. : As required

265. TECHNICIAN POWER ELECTRONICS SYSTEM

- i) Single phase Inverter with batteries : 1 Set
 ii) Digital Multi-meter : 1 No.
 iii) Wires, cables & tools : Assorted
 iv) SMPS Trainer kit : 1 No.
 v) Chopper trainer kit : 1 No.

- 275. MECHANIC AIR CONDITIONING PLANT**
 i) Ice candy plant 2 ton capacity
 ii) Other material : As required
- 277. INFORMATION TECHNOLOGY**
 i) Laptop
 ii) PC Dot-matrix printer, Inkjet printer, Laser printer
 iii) Projector
 iv) Monitor
 v) Barcode scanner
 vi) Network scanner
- 284. CIVIL ENGINEERING ASSISTANT**
 i) Sieve size passing through 4.75 mm and retained on 75 micron
 ii) Sieve size passing through 40 mm and retained on 4.75 mm
 iii) Cement : 5 Kg
 iv) Sand : 10 Kg
 v) Aggregate : 20 kg
 vi) Power tools

NON-ENGINEERING TRADES

- 133. DENTAL LABORATORY TECHNICIAN**
 i) Cold cure acrylic
 ii) Cold mould seal/Vaseline
 iii) Orthodontic wire
 iv) Orthodontic pliers
 v) Marker
 vi) Wire cutter
 vii) Maxillary/mandibular cast
 viii) Mandibular cast
 ix) Soldering machine
 x) Solder
 xi) Adam's clasp on both mandibular 1st molars
 xii) Molar tube -2
- 134. ARCHITECTURAL DRAUGHTSMANSHIP**
 i) Personal Computer with LCD Monitor
 ii) Drafting software Auto CAD
 iii) A0 plotter for sheet printing
 iv) A0 plotter sheet roll

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