**Ministry of Education**

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**Occupation: Vehicle Engine Overhauling L-lIl**

 **Consumable materials to be used for projects per candidate**

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| --- | --- | --- | --- | --- |
| **No.** | **Item description** | **Quantity** | **Unit** | **Specification** |
| 1 | Rage  | 1/2 | kg |  |
| 2 | Cleaning solvent | 3 | liter |  |
| 3 | Engine oil | 1/2 | liter |  |
| 4 | paper | 5 | pcs |  |
| 5 | Pen and marker | 2 | pcs |  |
| 6 | Plastic gauge | 1 | pcs |  |
| 7 | Wire brush | 1 | pcs |  |
| 9 | Brush | 1 | pcs |  |
| 10 | Gasoline fuel | 1/2 | liter |  |
| 11 | Penetrating oil | 1 | can |  |
| 12 | Developer  | 1 | can |  |
| 13 | Gasket maker | 100 | gm |  |
| 14 | Surface cleaner  | 1 | can |  |
| 15 | Lapping compound | 1 | pcs |  |
| 16 | Sand paper  | 1 | pcs |  |
| 17 | Lock tight  | 100 | gm |  |
| 18 | Teflon tape  | 1 | roll |  |
| 19 | Bin card  | 8 | pcs |  |
| 1 | Diesel and gasoline fuel | 2 | liter |  |
| 2 | Engine oil | 1 | liter |  |
| 3 | Automotive stranded wire  | 5 | meter |  |
| 4 | Distilled water | 1 | liter |  |
| 5 | Rage  | 1/2 | kg |  |
| 6 | Glove  | 2 | set |  |
| 7 | Fuse | 7 | pcs |  |
| 8 | Insulating tape | 1 | roll |  |
| 1 | Gasoline and diesel fuel | 2 | Liter |  |
| 2 | Rage  | 1/2 | Kg |  |
| 3 | Glove  | 1 | Set |  |
| 4 | Carburetor cleaner | 1 | Pcs |  |
| 5 | Penetrating oil | 1 | Pcs |  |
| 6 | Automotive wire  | 5 | meter |  |
| 7 | Lubricant oil | 1 | Liter |  |
| 8 | Insulating tape | 1 | Roll |  |
| 9 | Different rating fuse | 10 | Pcs |  |
| 10 | Soldering lead | 1 | Roll |  |
| 11 | Connector male and female  | 10 | Pcs |  |
| 12 | Relay | 3 | Pcs |  |

**Non consumable materials to be used for projects per candidate**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Item description** | **Quantity** | **Unit** | **Specification** |
| 1 | Bore gauge | 1 | set |  |
| 2 | Outside and inside micrometer | 2 | set |  |
| 3 | Straight edge  | 1 | pcs |  |
| 4 | Dial gauge | 1 | pcs |  |
| 5 | Feeler gauge | 1 | pcs |  |
| 6 | Vernier caliper | 1 | pcs |  |
| 7 | Telescopic gauge | 1 | set |  |
| 8 | Surface plate  | 1 | pcs |  |
| 9 | V-block | 2 | pcs |  |
| 10 | Hand tools box |  |  |  |
| 11 | Piston ring compressor and expander | 2 | pcs |  |
| 12 | Valve spring compressor | 1 | pcs |  |
| 13 | Tri-square  | 1 | pcs |  |
| 14 | Steel rule | 1 | pcs |  |
| 15 | Valve spring tension tester | 1 | pcs |  |
| 16 | Seal installer  | 1 | set |  |
| 17 | Snap ring compressor and expander  | 2 | pcs |  |
| 18 | Remer  | 1 | set |  |
| 19 | Gasket cutter | 1 | pcs |  |
| 20 | Hydraulic press machine | 1 | pcs |  |
| 21 | Torque wrench |  1 | pcs |  |
| 22 | Valve cleaning machine | 1 | pcs |  |
| 23 | Parts cleaning machine | 1 | pcs |  |
| 24 | Diesel EFI engine live | 1 | pcs |  |
| 25 | Gasoline EFI live | 1 | pcs |  |
| 26 | OBD2 scan tool | 1 | pcs |  |
| 27 | Oscilloscope  | 1 | pcs |  |
| 1 | Multi meter | 1 | pcs |  |
| 2 | Soldering gun  | 1 | pcs |  |
| 3 | Inductive timing light | 1 | pcs |  |
| 4 | Nozzle tester | 1 | pcs |  |
| 5 | Compression tester for gasoline diesel | 2 | pcs |  |
| 6 | Air compressor  | 1 | pcs |  |
| 7 | Tachometer  | 1 | pcs |  |
| 8 | Vacuum tester  | 1 | pcs |  |
| 9 | Sound scope  | 1 | pcs |  |
| 10 | Contact breaker point | 1 | pcs |  |
| 11 | Condenser or capacitor  | 1 | pcs |  |
| 12 | Spark plug  | 8 | pcs |  |
| 13 | Glow plug  | 8 | pcs |  |
| 14 | Test light /lamp | 1 | pcs |  |
| 15 | Feeler gauge | 1 | pcs |  |
| 16 | Screw driver | 2 | pcs |  |
| 17 | Different size of wrench | 1 | set |  |
| 18 | Pliers  | 1 | set |  |
| 19 | Valve grinding machine | 1 | pcs |  |
| 20 | Valve lapping machine | 1 | set |  |
| 21 | Valve seat cutter | 1 | set |  |
| 1 | Different types of sensors | 10 | pcs |  |
| 2 | Different types of Actuators  | 6 | pcs |  |
| 3 | Engine ECU | 1 | pcs |  |
| 4 | OBD2 Scan tool | 1 | pcs |  |
| 5 | Digital multi meter  | 1 | pcs |  |
| 6 | Soldering gun  | 1 | pcs |  |
| 7 | Different size of wrench | 1 | set |  |
| 8 | Different types of screw drivers  | 1 | set |  |
| 9 | Cutting tools | 1 | set |  |
| 10 | Special service tools  | 1 | set |  |
| 11 | Service manual | 1 | pcs |  |
| 12 | Allen key | 1 | set |  |