

INDIRA TECHNICAL EDUCATION SOCIETY, NASHIK

CERTIFICATE COURSE FITTER (F)

**EXAM SCHEME: THEORY PAPER – I - 100 MARKS – 3 HRS.
PRACTICAL 100 MARKS – 2 HRS.**

[FITTER / DMES – I / ADMES – I / DPES - I]

THEORY SYLLABUS

1. SAFETY:

- General safety, Personal safety, Mechanical tool safety, Safety rules to be observed in Workshop. First-Aid knowledge & cause of accident & its prevention.

2. UNITS OF MEASUREMENTS:

- British & Metric system of units, its conversions in respect of measurements for e.q. linear, Area & volume.

3. MEASURING INSTRUMENTS:

- Classification of measuring Instruments.
- Precision Instruments: - Micrometer (Out side, inside, depth gauge)
Calipers: Vernier Caliper, Height Gauge, steel rule, Try square slip gauge, sine bar.
- Non-precision Instruments: Steel rule.
Caliper: Outside, Odd leg divider, Combination set, try square
Marking tools: Scriber & Scribing block, Surface plate, punches, hammers, Angle plate, Vee block, Marking Media (Persian Blue, Red Lead, Chalk).

4. CUTTING TOOLS:

- Study of different cutting tools such as chisels, hacksaw blade.
- Files: Description, its material, grades, cuts & its parts uses. Specification. Care & Maintenance of files File cards, pining of files, Special types of files such as needle files, safe edge files, hand file etc.
- Cutting tools, its uses & selection of special tools such as drill, reamers, grinding wheels, knowledge of re sharpening of these tools.
- Drill: Knowledge of standard drill sizes such as letter No. & fractional drill nomenclature of drill & important angle of drill, causes of breakage of drill. Importance of cutting speed and feed for drilling.
- Use of Tap and Die Material for Tap & Die safety precautions while tapping.

5. HOLDING DEVICE:

- Work Holding Devices: Construction & use of devices such as bench vice, Machine vice, clamps, Parallel block, step block, Nuts & Bolts etc .
- Cutting tools holding Device: Knowledge of holding devices such as sockets, Sleeves, drill chucks, die stock & Top range.

6. GENERAL HAND TOOLS:

Knowledge and importance of workshop, hand tools such as screw driver, Spanners, Single ended, ring spanner, pliers, mallet, soft hammer etc.

7. ENGINEERING FASTNER:

- Types of standard threads, such as metric BSW, BSP, BA, square, knuckle, ACME Threads and their applications.

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- Types of screw such as counter sunk, Hexagonal, square half round headed screw, Allenkey.
- Importance of fasteners in workshop practice, permanent fastener such as rivets, welding, Soldering, brazing, types and method of riveting.
- Temporary fastener: Various types of keys, pins, cotters nuts and bolts. Studs, Washers etc.

8. LUBRICATION & LUBRICATIONS:

- i) Importance of coolants & Lubrication in workshop.
- ii) Properties of Lubricants, coolants for various metals.
- iii) Types of coolants, Lubricants used for machines.
- iv) Preventive Maintenance necessity. Advantages & Types of maintenance.

9. LIMITS, FITS, TOLERANCE & INTERCHANGEABILITY:

Standard systems of limits, fits & tolerance as per Indian standard, concept of interchangeability.

10. JIGS & FIXTURES:

Construction & necessity of jigs & fixture, principles of jigs & fixture, Material used for Jigs & fixtures.

11. GAUGES:

Knowledge of standard gauges. Classification of gauges such as working gauges, Inspection gauges and Master gauges. Types of Gauges such as snap gauges. Thickness gauges, wire gauge, plug gauges etc.

12. BEARINGS:

Introduction & classification of bearings. (general & thrust) Types of bearings such as Roller, Taper roller bearings ball bearings, needle roller bearing, Importance of bearing in Machine tools.

13. BASIC ELECTRICITY:

Basic terminology's in Electricity, Ohm's law & it's applications, Conductors & Insulators Principles of transformers.

SCHEME OF EXAMINATION

Theory Paper	:	100 Marks	3 Hours
Practical	:	75 Marks	2 Hours
Journal	:	15 Marks	
Oral	:	10 Marks	

