

NATIONAL REMOTE SENSING CENTRE  
**ADVERTISEMENT NO.NRSC/RMT/3/2017 DATED 20.05.2017**

**Name of the Post: Technician – B (Fitter)**

**Post Code: TB 3**

**SYLLABUS – WRITTEN TEST**

Type of Examination	:	Objective Type (Multiple Choice Questions)
No. of Questions	:	80 Questions
Apportionment of marks	:	Each Question carries one mark
Duration of Examination	:	02 Hours

**Qualification Requirement: ITI/NTC/NAC in Fitter Trade**

*(Examination will broadly comprise of below mentioned topics as covered in ITI/NTC/NAC in Fitter trade)*

1. Importance of safety and general precautions observed in the industry/shop floor, welding shop, Lathe, sheet metal workshop, sheet and sizes, Commercial sizes and various types of metal sheets, coated sheets(their uses as per BIS specifications). Safety Equipment and their uses
2. Operation of electrical mains, PPEs, 5S concept & its application. Response to emergencies eg; power failure, fire, and system failure.
3. Linear Measurements
4. Description, uses, care and maintenance of Types of hammers, V<sup>o</sup> Blocks, Bench vice, vice clamps, hacksaw frames, blades, cold chisels( materials, types, cutting angles), Types of Calipers, Linear measurements( its units, dividers, calipers, hermaphrodite, centre punch, dot punch), Surface plate and auxiliary marking equipment, angle plates, parallel block, workshop surface plate, Marking off and layout tools, Dividers, scribing block, odd leg callipers, punches description, Anvil and swage blocks, Forging tools(hammers, band, sledge), Chisels, set hammers, flatters, hardier, fuller swage, Measuring and checking tools( steel rule, brass rule, calipers, try square), Radius gauge, feeler gauge, hole gauge, Vernier micrometer, Dial test indicator, Digital dial indicator, Comparators, Marking media, Power Saw ,band saw, Circular saw machines used for metal sections cutting, Marking and measuring tools, wing compass, Prick punch, tin man"s square tools, snips, Tin man"s hammers and mallets type-sheet metal tools, Soldering iron, Trammel, Hand grooves, Stakes-bench types
5. Files- specifications, description, materials, grades, cuts, file elements, uses, Types, care and maintenance, various types of keys, allowable clearances & tapers, types, uses of key pullers.
6. Principle, constructional features, parts graduation, reading, use and care of the instruments - . Micrometer, Micrometer depth gauge, Digital micrometer, Vernier callipers, Vernier bevel protractor, dial Vernier Caliper, Digital vernier calliper, Power hammer
7. Drilling processes types, gang and multiple drilling machine. Determination of tap drill size. Drill- material, parts and sizes., cutting angle & speed feed. R.P.M. for different materials. Drill holding devices, Drill troubles, Drill kinds, Boring tools and enlargement of holes.

8. Main operations performed in a forging shop such as upsetting drawing, twisting, bending, punching, drilling, and welding and Physical properties of engineering metal
9. Metallurgical and metal working processes such as Heat treatment, various heat treatment methods -normalizing, annealing, hardening, case hardening and tempering.
10. Various types of metal joints, their selection and application, tolerance for various joints, their selection & application.
11. Solders-composition of various types of solders, and their heating media of soldering iron, fluxes types, selection and application-joints
12. Rivets-Tin man's rivets types, sizes, and selection for various works. Riveting tools, dolly snaps description and uses. Method of riveting, shearing machine-description, parts and uses.
13. Workshop Science and Calculation
14. Engineering Drawing
15. I.T. Literacy, English Literacy, Communication skill, Entrepreneurship skill, Environment Education, Occupational Safety, Health & Environment, Labour Welfare Legislation, Quality Tools.
16. Welding description types, equipment, method of operating, types of joints.
17. Counter sink, counter bore and spot facing-tools and nomenclature, Reamer-material, types (Hand and machine reamer), kinds, parts and their uses,
18. Screw threads: terminology, parts, types and their uses. Screw pitch gauge: material parts and uses. Taps British standard (B.S.W., B.S.F., B.A. & B.S.P.) and metric /BIS (course and fine) material
19. Dies : British standard, metric and BIS standard, material, parts, types, Method of using dies. Die stock: material, parts and uses.
20. Grinding wheel: Abrasive, grade structures, bond, specification, use, mounting and dressing. convex and concave uses care and maintenance.
21. Types of limit, terminology of limits and fits-basic size, actual size, deviation, high and low limit, zero line, tolerance zone Different standard systems of fits and limits. British standard system, BIS system
22. Cast Iron: cupola furnace types, properties and uses. Wrought iron properties and uses, Steel manufacturing process plain carbon steels, types, properties and uses.
23. Non-ferrous metals (copper, aluminum, tin, lead, zinc) properties and uses.
24. Simple scraper- cir., flat, half round, triangular and hook scraper and their uses. Blue matching of scraped surfaces (flat and curved bearing surfaces)
25. Calibration of measuring instruments , Preventive maintenance-section inspection, Assembling techniques
26. Lathe description, features, cutting mechanisms, cutting tools, cutting speed, coolants and lubricants.
27. Chucks and chucking the independent fourjaw chuck. Reversible features of jaws, the back plate, Method of clearing the thread of the chuck-mounting and dismounting, chucks, chucking true, face plate, General turning operations, knurling, taper
28. Screw threads, System of drill size, Fractional size.
29. Slip gauge classification & accuracy, set of blocks (English and Metric), Locking device: Nuts- types (lock nut castle nut, slotted nuts, swam nut, grooved nut), Lapping, dimensional tolerances of surface finish.

30. Honing, Bearing-Roller and needle bearings, Synthetic materials for bearing, Bearing metals, Hardening, tempering, Annealing and normalising , tempering colour chart.

### **Syllabus for Skill Test**

1. File thin metal to an accuracy of 0.5 mm.
2. Forge M.S. round rod to square Forge flat chisel
3. Make riveted lap and butt joint
4. Make isometric drawings and orthographic projections of simple geometrical solids
5. Assembly of machine parts from blue prints
6. Threading on lathe, prepare a nut and match with bolt.
7. Making square, butt joint and „T“ fillet joint-gas and arc
8. Bend sheet metal into various curvature form,
9. Make sliding fit with angles other than 90o, sliding fit with an angle
10. Dovetail and Dowel pin assembly, scraps cylindrical bore.
11. lapping of gauges (hand lapping)
12. Enlarge hole and increase internal dia. File cylindrical surfaces. Make open fitting of curved profiles.