

**DETAILED SYLLABUS FOR THE POST OF
STORE ASSISTANT IN KERALA STATE BAMBOO CORPORATION LIMITED**

(Category Nos: 82/2021)

FITTER (Total – 25 Marks)

MODULE – I (6 Marks)

Safety - Importance of safety, general safety, personal safety, machine safety precautions. Personal protective equipments and its applications.

First Aid - Importance of first aid, basic first aid, ABC of first aid, aim of first aid, methods of giving first aid to the victim.

Fire – Fire triangle, class of fire, fire extinguisher, type of fire extinguisher, fire extinguisher recommended for each class of fire.

Handling of waste material – Waste material, list of waste material, methods of waste disposal.

Shop floor maintenance – Benefits of shop floor maintenance, introduction to 5 S concept, its applications and benefits.

MODULE – II (7 Marks)

Units – Units of linear and angular measurements, SI, CGS, MKS, FPS units, fundamental units and supplementary units, Unit conversions.

Linear measuring tools – outside calliper, inside calliper, steel rule, depth gauge, vernier calliper, vernier height gauge, micrometers – constructional features, working principle, least count, applications, care and maintenance

Angular measuring tools – bevel gauge, universal bevel gauge, bevel protractor, combination set, vernier bevel protractor – constructional features, working principle, least count, applications, care and maintenance.

Sine bar, slip gauge and dial test indicator – constructional features, working principle, applications, care and maintenance.

MODULE – III (6 Marks)

Hand tools – File, hack saw & blade, chisel, punch, hammer, jenny calliper, divider, tap & tap wrench, die & die stock, drill bit, reamer, scriber – type, use, constructional features, specifications, care and maintenance.

Gauges – Feeler gauge, SWG, screw pitch gauge, snap gauges, limit gauges, radius gauge, telescopic gauge, small hole gauge – use, constructional features, care and maintenance.

Marking media – White wash, Prussian blue, copper sulphate, cellulose lacquer – type, applications, preparation, advantages & disadvantages.

Holding and Supporting devices – Bench vice, machine vice, pipe vice,

hand vice, pin vice, tool makers vice, V-block, parallel block, surface plate, angle plate, marking off table – type, use, constructional features, specifications, care and maintenance.

MODULE – IV

(6 Marks)

Engineering materials – metals & non metals

Metals – ferrous metals – pig iron, wrought iron, cast iron, plain carbon steel – ore, manufacturing process, properties, uses, melting points.

Non ferrous metals – copper, aluminium, tin, lead, zinc – ore, manufacturing process, properties, uses, melting points.

Furnaces – cupola furnace, blast furnace – other making process of metals.

Heat treatment process – hardening, tempering, annealing, normalizing, case hardening – process, applications, important temperatures points.

Importance of safety and general precautions observed in welding shop

Welding – principle of welding, types of welding – forge welding, arc welding, Gas welding, method of operation, tools and equipments used for welding – arc

Welding equipments, gas welding plant, gases used in gas welding, types of Flames, types of joints in welding.

Soldering – Soldering iron – type, specification, uses, Solder – soft solder, hard solder, composition of various type of solder and their applications, Heating media of soldering iron, flux type, selection and applications

Rivets – Type, size and selection for various works, method of riveting

MECHANICAL (Total – 25 Marks)

MODULE – V

(8 Marks)

Introduction to Engine: Description of internal & external combustion Engines, Classification of IC engines, Principle & working of 2&4-stroke diesel engine, compression ignition Engine (C.I), Principle of Spark Ignition Engine(SI), Differentiate between 2-Stroke and 4 stroke, C.I Engine and S.I Engine

Petrol Engine Basics: 4-stroke spark-ignition Engines- Basic 4-stroke Principles. Spark- ignition Engine components- Basic Engine components, Engine Cams & camshaft, Engine Power transfer, Scavenging, Counter weights, Piston Components.

Intake & exhaust systems –Electronic fuel injection Systems, Exhaust systems.

Intake system components, Air cleaners, Carburettor air Cleaners, EFI air cleaners, Intake manifolds, Intake air Heating.

Gasoline Fuel Systems:Description of Gasoline fuel, Gasoline fuel characteristics, Controlling fuel burn, Stoichiometric ratio, Air, density, Fuel supply system

MODULE – VI**(9 Marks)**

Power Transmission – Belt drive, chain drive, gear drive

Belt drive – types of belt, size, specification, material, selection of type of belt, advantages and disadvantages of belt drive, calculation of length of belt and slip.

Chain drive – Types of chain, types of sprocket, specification of chain and sprocket, advantages and disadvantages of chain drive.

Gear drive – Type of gear, parts of gear, type of gear drives, specifications, advantages and disadvantages of gear drive, calculation of gear drive.

Other elements in power transmission – pulleys, shaft, bearing, clutches, keys, pins – type, specification, uses.

Lubrications – methods of lubrication, lubricants used, method of application, uses.

MODULE – VII**(8 Marks)**

Limit, Fit, Tolerance – interchangeability, necessity in engineering field, definition BIS, definition and type of limit, terminology of limits and fits, basic size, actual size, deviation, high and low limits of size, zero line, tolerance zone.

Different standard systems of fits and limits, British standard systems, BIS systems.

Methods of expressing tolerance as per BIS.

Fit – definition, type – clearance, transition, interference – description of each.

Limit systems – hole basis and shaft basis systems.

Fundamental deviations and fundamental tolerance.

Thread – Types of thread, features of thread, applications of thread, thread cutting operations.

ELECTRICAL (Total – 25 Marks)**MODULE – VIII****(8 Marks)**

Fundamentals of electricity, definitions, units & effects of electric current.

Conductors and insulators.

Conducting materials and their comparison.

MODULE – IX**(9 Marks)**

Ohm's Law; Simple electrical circuits and problems-Kirchoff's Laws and applications.

Series and parallel circuits - Open and short circuits in series and parallel networks

Laws of Resistance and various types of resistors.- Wheatstone bridge; principle and its applications.

Effect of variation of temperature on resistance. Different methods of measuring the values of resistance. Series and parallel combinations of resistors.

MODULE – X

(8 Marks)

Conventional and nonconventional sources of energy and their comparison.
Power generation by thermal and hydel power plants
Various ways of electrical power generation by non-conventional methods.
Power generation by solar and wind energy.
Principle and operation of solar panel.

CIVIL (25 Marks)

MODULE: 1 BASIC ENGINEERING DRAWING

(2 marks)

Drawing instruments, Uses, Layout of drawing sheet, Types of lines, Lettering, Dimensioning, Types of Scales, Plane geometrical construction, Conic section, Projection.

MODULE:2 BUILDING MATERIALS AND CONSTRUCTION (2 marks)

Properties of engineering materials, Building Stones, bricks , lime, timber, tiles , sand, cement mortar and concrete, Admixtures, Ferrous metals, Non ferrous metals, Glass, Protective materials

MODULE:3 BUILDING CONSTRUCTION

(3 marks)

Stone masonry, Brick masonry, composite masonry, Foundation, Bearing capacity of soil, Scaffolding shoring and underpinning, Damp proofing water proofing and termite proofing, Arches, lintels, stairs, RCC -introduction, uses materials proportions Formwork including bending of bars and construction reference of BIS code, RCC lintel, column, slab, beam, footings, Method of mixing concrete, slump test Steel structures – Common forms of steel sections, Tension and compression member, Types of riveted joints, welded joints, Doors and windows, Roofs, Floors and floorings

MODULE:4 BUILDING DRAWING AND ESTIMATING

(3 marks)

Building rules and byelaws, Provision of safety for buildings , types of estimate, Sanctions, , Rules and methods of measurements of works, Rate analysis, labour, materials, schedule of rates, Valuation- terms

MODULE:5 IRRIGATION ENGINEERING

(2 marks)

Terms used in irrigation, Water requirements of crops, Wiers and barrages, storage and diversion headwork, Reservoir, Dams, Canals, Cross drainage works, Hydroelectric projects and Turbines

MODULE:6 SURVEYING

(3 marks)

Chain surveying- principles-instruments used , Filed book plotting, compass surveying, Planetable surveying, Levelling and contouring, Curves, Theodolite

Area and volume calculation

Introduction to total station ,Types of total station , Measurement with total station , Charecteristic and features of Total station , Global positioning systems

MODULE:7 AutoCAD**(3 marks)**

Introduction , Basic commands, Tool bars, Function keys and shortcut keys, 2D drafting, 3D modelling-shortcut keys, knowledge of layout and printing drawing

MODULE:8 UNITS OF MEASUREMENTS AND APPLIED MECHANICS (2 marks)

Units of measurements, Simple machines, work, power, energy, simple stress, strain, Mensuration, simple trigonometry.

MODULE:9 TRANSPORTATION ENGINEERING**(3 marks)**

Road, Development of road, General principles of alignment, Classification and construction of different types of roads, Railway engineering- Type of rail sections , Permanent way, Sleepers Ballast, Fixtures and fastenings, Creep - Screw spikes - Washers Rail sections, signalling Points and crossings, Bridge engineering- Foundation of bridges, Super structure of bridges and classification of bridges.

MODULE:10 PUBLIC HEALTH AND SANITATION**(2 marks)**

Pipes and pipe joints for underground drainage ,Quality of water, Sources of water, Treatment and conveyance of water, Distribution of water, Systems of sanitation, house drainage, collection and conveyance of sewage, Septic tank, water and sewage treatment plant, Sewer appurtenances, waste water disposal.

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper