# JUNIOR INSTRUCTOR (ARITHMETIC-CUM-DRAWING)

TECH. PSC

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# EXAM DETAILS

## METHOD OF RECRUITMENT
Direct

## AGE LIMIT
19-44

## NAME OF POST
Junior Instructor
(Arithmetic-Cum-Drawing)

## DEPARTMENT
Industrial Training

## NUMBER OF VACANCY
Reported - 03
Expecting - Upto 100.

## QUALIFICATION:
1. S.S.L.C or its equivalent qualification.

2. (a) National Trade Certificate in the appropriate trade with three years experience in the trade after obtaining thecertificate.

OR

(b) National Apprenticeship Certificate in the appropriate trade with one year experience after obtaining the certificate

OR

(c) Diploma in the appropriat branch of Engineering from a Government or Government Recognized polytechnic or its equivalent qualification.

**NOTE : ANY BRANCH DIPLOMA OR B.Tech HOLDERS CAN APPLY**

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- **Intensive class room coaching**

More Info: techpsc.in

# EXPECTED SYLLABUS

## JUNIOR INSTRUCTOR (ARITHMETIC-CUM-DRAWING)

### Fundamentals

Classification of Units, Unit conversions, Fractions, Average, Square, Square root, Application of Pythagoras theorem, Ratio & Proportion, Percentage, Profit and loss, Simple & compound interest, Algebra- Addition Subtraction, Multiplications & divisions, Theory of indices, Algebraic formulas

### Power transmission

Simple belt drive, multiple belt drive, Simple gear drive, Gear trains

### Material Science

Type of metals, Physical and mechanical properties of metals, Ferrous and non ferrous metals, Cast iron, Steel, Alloy steel and carbon steels, Different heat treatment process- Hardening, tempering, annealing, normalizing & case hardening

### Engineering Mechanics

Speed, Velocity, Acceleration & Retardation, Potential energy, Kinetic Energy, work, Power, Energy, HP, IHP¸BHP& Efficiency, Simple machines, Effort and load, Mechanical advantage, Velocity ratio, Efficiency of machine, Relation between efficiency, Velocity ratio and mechanical advantage, Linear motion, Rotary motion, Friction- Advantage & disadvantages, Laws of friction, Coefficient of friction, Angle of friction, Angle of Repose, Center of gravity of geometrical figures, Mass, Density, Weight and specific gravity

### Mensuration

Areas of quadrilateral, Circles & various geometrical sections, Relation between sides and diameters, Triangles, Properties of angles and triangles, Calculation of perimeters, Surface area of rigid bodies, Volume of rigid bodies, Area of Segment & sector of circle, Area of irregular surfaces and its applications

### Trigonometry

Measurement of angle, Trigonometric ratios, Trigonometric table, Trigonometric application in calculating height and distance

## Basic Electricity

Introduction and uses of electricity, Molecule, Atom, How electricity is produced, AC, DC & their comparison, Voltage, current, Resistance & their units, Conductor, insulator, Series& Parallel connection, Ohms law, Electrical power energy and their units, Self and mutual inductance, Electro magnetic induction and emf generation

## Heat & Temperature

Concept of heat & temperature, Effects of heat, Difference between heat & temperature, Scales of temperature- Celsius, Fahrenheit, Kelvin & Conversion between scales of temperature, Temperature measuring instruments, Types of thermometer, pyrometer, Heat transfer modes- Conduction, Convection & Radiation, Coefficient of linear expansion, Heat loss and heat gain, Thermal conductivity & insulators, Boiling point & melting point of different metals & non-metals, Concept of pressure & it's different units

## Elasticity

Elastic, Plastic materials, Stress, Strain & different moduli ,Poisson's ratio, Hookes Law, Ultimate & working stress, Factor of safety, Relationship between three moduli

## Engineering Drawing

Drawing instruments, Lines, Lettering & dimension, Different types of scales, Conic sections, Miscellaneous curves- involute, cycloid, helix & spiral, Theory projections, Projection of points ,Lines, Planes & solids, Section and intersection of solids, Development of surfaces, Orthographic projection, Oblique projection, Isometricprojection & Perspective projection, Auto CAD

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