

TENTATIVE SYLLABUS FOR THE POST

JUNIOR INSTRUCTOR ARITHMETIC CUM DRAWING

FOR ADMISSIONS AND MORE DETAILS:

8921904662,8891115584



TENTATIVE SYLLABUS FOR JUNIOR INSTRUCTOR ACD

PART 1– WORKSHOP CALCULATION

- **1.System of units, factors and fraction** : Classification of system of units Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units, Measurement units and conversion Conversions of length, mass, force, work, power and energy, Factors, HCF, LCM and problems, Fractions, Decimal fractions.
- **2.Square root, Ratio and proportion, percentage**: Square and square root, Applications of pythagoras theorem and related problems, Ratio and proportion, Direct and indirect proportions, percentage to decimal and fraction
- **3.Algebra**: Algebraic symbols and fundamentals, Addition, subtraction, multiplication and division of algebra
- **4.Material science, Mass weight and density**: Physical and mechanical properties of metals, Introduction of iron and cast iron, Types of ferrous and non ferrous, Difference between iron & steel, alloy steel & carbon steel, Properties and uses of rubber, timber and insulating materials, Mass, units of mass, density and weight, Difference between mass & weight, density & specific gravity.
- **5.Speed and velocity, work, power and energy**: Rest, motion, speed, velocity, difference between speed & velocity, acceleration & retardation, Units of work, power and energy, horse power of engines and mechanical, efficiency Potential energy, kinetic energy.

- **6.Heat and temperature :** Concept of heat and temperature, effects of heat, thermometer scale, celcius,fahrenheit, reamer, kelvin and difference between heat and temperature,Conversion between centigrade, fahrenheit, reamer, kelvin scale of temperature ,Temperature measuring instruments, types of thermometer, pyrometer and ,transmission of heat ,Co-efficient of linear expansion,Concept of pressure and its units in different system Thermal conductivity and insulations
- **7.Basic electricity :** Introduction, use of electricity, molecule, atom, electricity is produced, electric current, voltage, resistance and their units Ohm’s law, relation between V.I.R, series & parallel circuits Electrical power, energy and their units,Magnetic induction, self and mutual inductance and EMF generation

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Junior Instructor: Arithmetic cum Drawing

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PART 2 - ENGINEERING DRAWING

- **1.Engineering Drawing: Introduction and its importance:** Relationship to other technical drawing types,Conventions,Viewing of engineering drawing sheets,Method of Folding of printed Drawing Sheet as per BIS SP:46-2003
- **2. Drawing Instrument:** Drawing board, T-square, Drafter (Drafting M/c), Set squares, Protector, Drawing Instrument Box (Compass, Dividers, Scale, Diagonal Scales etc.), pencils of different grades, Drawing pins/ Clips.
- **3.Lines :** Definition, types and applications in drawing as per BIS: 46-2003,Classification of lines (Hidden, centre, construction, extension, Dimension, Section) , Drawing lines of given length (Straight, curved) , Drawing of parallel lines, perpendicular line , Methods of Division of line segment.
- **4.Drawing of Geometrical figures:** Definition, nomenclature,Angle: Measurement and its types, method of bisecting., Triangle: different types Rectangle, Square, Rhombus, Parallelogram, Circle and its elements ,Different polygon and their values of included angles. Inscribed and circumscribed polygons
- **5.Lettering & Numbering :** Single Stroke, Double Stroke, Inclined.
- **6. Dimensioning:** Definition, types and methods of dimensioning (functional, non-functional and auxiliary) Position of dimensioning (Unidirectional, Aligned) Types of arrowhead Leader line with text Symbols preceding the value of dimension and dimensional tolerance.
- **7. Sizes and layout of drawing sheets :** Selection of sizes,Title Block, its position and content Item Reference on Drawing Sheet
- **8.Method of presentation of Engineering Drawing :** Pictorial View ,Orthographic View ,Isometric View



- **9.Symbolic representation – different symbols used in the trades** : Fastener (Rivets, Bolts and Nuts) ,Bars and profile sections ,Weld, Brazed and soldered joints , Electrical and electronics element , Piping joints and fitting
- **10.Projections** : Concept of axes plane and quadrant ,Orthographic projections , Method of first angle and third angle projections (definition and difference) , Symbol of 1st angle and 3rd angle projection.
- **11.Orthographic projection from isometric projection**
- **12.Reading of fabrication drawing**

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THANK YOU

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