

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS FOR COMPETITIVE EXAMINATION FOR THE POST OF GROUP INSTRUCTOR/ SURVEYOR/ ASSISTANT APPRENTICESHIP ADVISOR (Gr.-II)

SKILL, EMPLOYMENT AND ENTREPRENEURSHIP DEPARTMENT

1. Safety precautions, first aid, firefighting equipments, treatment of electric shock, burns and cuts. General procurement procedures, inspection of Material, maintenance of store records and store keeping. Method of Communication Skills, Entrepreneurship. Factories Act-1948 and Factories (Amendment) Bill, 2016. Apprenticeship Act 1961, Central Apprenticeship Council Rules 1962, Apprenticeship Rules 1992, Amendment to Central Apprenticeship Rules 2015, Apprenticeship (Amendment) Rules 2019, National Apprenticeship Promotion Scheme.
Introduction of Industrial Engineering & productivity, Functions of Management, Organization Structure, Basics of Wage, Incentives, Payment Systems, Cost & Cost control. Depreciation, Work study, Methods study, time study. Industrial Safety. Basic Principle of Work & Job design, Job Evaluation & Merit Rating.
Law of parallelogram of forces, Resultant of two or more forces, Basic conditions of equilibrium, law of polygon of forces, Moment and applications of moments, Newton's laws of motion, Work, power and energy, work done by a constant force. Lettering, plain geometrical figures (line, angles, triangles, rhombus, quadrilaterals, polygons, ellipses, parabola, hyperbola, etc.) orthographic projections & Isometric projection of geometrical solids. Principles, representation of different types of scales, graphic scales.
2. Nature of electricity, E.M.F., Voltage, current, work, power, energy, A.C. and D.C. supply. Ohm's law, Kirchoff's laws, General concept of cell and battery & their defects & remedies. Calculation of voltage, current and power in A.C. circuits. Wire Joints, types and methods of domestic and power wiring and their applications. Brief idea of conductors, insulators and semi conductors. Different types of electrical and electronic components & their symbols, uses. Different types of resistors, capacitors, inductor, switches and connectors. Fundamental of Solar Power, Solar cell & Renewable energy and it's advantages. Principle & construction of single phase Transformer, common hand tools for Electrical work.
3. Various types of building materials: Stone, Lime, Cement, Glass, Timber, Paint, Varnishes, Bricks, Aggregates: Classification, properties and selection criteria. Basic fundamental of selection site for construction of various types of buildings. Basic principles of building planning and building bye laws. Requirements for Fire Protection, Ventilation, Eco-friendly and Green buildings. Water supply: demand, Sources, Quality standards, Water distribution system and storage, Method of Water Harvesting. Application of Water Purifier. Different types of pollutants in environment, land, soil, water and noise pollution. Different types of woods, their uses, seasoning of wood, different types of paintings and varnishing. Brief description and uses of carpenter's tools and machines.
4. Concept of stresses and strains, Mechanical properties of ductile and brittle material, Stress concentration, Introduction of various design considerations like strength,

stiffness weight, cost, factor of safety, space etc; Concept of fracture in ductile and brittle metals, Heat treatment of steels, Plain carbon steel, alloy steels, effect of alloying elements steel, composition, application and properties of common engineering materials like cast iron, mild steel aluminum, copper, timber, plastic, zinc, lead and alloys. Name, functions, material and specifications of common hand tools, holding tools, holding devices, cutting tools, measuring and marking tools used in carpentry, welding, sheet metal, plumbing, fitting shop, automobile. Description of a work bench. Specifications and classification of lathe machines & drilling machines. Press working of sheet metal: Types of presses and operations. Die materials, Construction details of die set. Machine tools and operations, cutting tools & their materials, Cutting speed, feed and depth of cut.

Automobile: Ideal and actual cycles of operation, fuels, combustion in SI and CI engine, carburetors and fuel injection systems for SI engines, fuel injection systems for diesel engines, lubrication systems, cooling systems, supercharging, Scavenging, engine performance, testing and exhaust emission characteristics, exhaust pollution. Automotive pollution and its control strategies. E- Vehicles. Air refrigeration system, Heat pump, COP, Vapour compression refrigeration cycle, Different types of refrigerants for different applications.

5. Working and Construction of Rectifiers and their applications. Digital and analog signals. Basic logic functions and basic logic gates.

Number System: -Decimal, Binary, Octal and Hexadecimal number system. Smart Devices, Multimedia Devices, Basics of Optical Fiber Communication, Cables, Joints & their tools. Classification and application of Computer. Hardware, software (Basic fundamental of Operating Systems, Application Software, Utility software) and firmware. Data Base Management, types, physical and logical concept of data. Information and its characteristics. Representation of information inside a computer. Awareness of Information Technology Act 2000. E-commerce, Cyber security topics related to e-commerce, Internet, E-mail & Web-Browser.

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**Scheme of examination and syllabus for the post of Group Instructor/Surveyor/Assistant
Apprenticeship Advisor (Gr-II)**

Written Examination - 150 Marks

S. No.	Subject	No. of Questions	Total Marks	Examination Duration
1	Concerned Subject & Experience (as prescribed in qualification)	150	150	2.30 Hours
	Total	150	150	

1. The competitive examination shall carry 150 marks and 150 questions of Multiple Choice Type questions.

2. There shall be one paper. Duration of Paper will be Two hours and Thirty Minutes.

3. Negative marking shall be applicable in the evaluation of answers. For every wrong answer one-third of the marks prescribed for that particular question shall be deducted.

Explanation: - Wrong answer shall mean an incorrect answer or multiple answers.

उक्त पद हेतु आयोजित की जाने वाली परीक्षा के लिए ओ.एम.आर. उत्तरपत्रक में प्रश्नों के विकल्प भरने के संबंध में विशेष निर्देश:-

1. Each question has five options marked as 1, 2, 3, 4, 5. You have to darken only one circle (bubble) indicating the correct answer on the Answer Sheet using BLUE BALL POINT PEN.

2. It is mandatory to fill one option for each question.

3. If you are not attempting a question then you have to darken the circle '5'. If none of the five circles is darkened, one third (1/3) part of the marks of question shall be deducted.

4. After solving question paper, candidate must ascertain that he/she has darkened one of the circles (bubbles) for each of the questions. Extra time of 10 minutes beyond scheduled time, is provided for this.

A candidate who has not darkened any of the five circles in more than 10% questions shall be disqualified.