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**Syllabus for Professional Examination for AEs, AAEs of GWSSB (Mechanical)**

**PAPER – 1**

**Sub: General Engineering (Mechanical)**

- (1) Standard weights and measurements of engineering materials required in electro mechanical field.
- (2) Material handling equipments like EOT / HOT cranes, wire rope hoists, chain pulley blocks.
- (3) Welding, brazing and soldering.
- (4) Use of precision measuring instruments used in electro mechanical industries & applications viz. vernier calipers, micrometers, alignment indicators etc.
- (5) Use of metering instruments used in electro mechanical industries & applications.
- (6) Various types of pumps (centrifugal / reciprocating) and their applications.
- (7) Oils and lubricants: Types, Usage & Reclamation.
- (8) Electrical equipments viz. induction motors, transformers, panels, generating sets, cables, fans, lighting accessories including energy efficient lighting etc.
- (9) Air compressors and their applications.
- (10) Operation, maintenance & repairs of hand pumps.
- (11) Metallic & non metallic pipes, manufacturing processes, specifications, laying and jointing.
- (12) Corrosion & its control.
- (13) Internal combustion engines: Types & applications.
- (14) Preparation of estimates of various works covered in water supply including M & R estimates of pumping systems.
- (15) Write-off and disposal of machineries and vehicles.
- (16) General knowledge of various international & national standards pertaining to electro mechanical activities in water supply sector.
- (17) General knowledge of various sources of energy.
- (18) Usage of computer in water supply sector.
- (19) Geological survey, Remote Sensing, Geophysical instruments, Electro loggers.
- (20) Water Quality & Acceptance Standards.

**Syllabus for Professional Examination for AE / AAE of GWSSB (Mechanical)**

**PAPER – III**

**Special Subject: Mechanical Engineering**

- (1) Fundamental principles of drilling of tube wells & bore wells including processes / stages of works involved.
- (2) Types of drilling technology, various types of drilling rigs and their sub assemblies / components including selection / applications of rigs.
- (3) Drilling tools / accessories & auxiliary equipments.
- (4) General knowledge of Geological strata, sampling, electro logging, litho logical logs, pipe assembly finalisation etc.
- (5) Pipes & screens used in tube / bore wells.
- (6) Development of tube / bore wells.
- (7) Measurement of yield of tube / bore wells including methods & instruments.
- (8) Verticality of tube wells.
- (9) Pumping machinery & accessories used in harnessing of tube / bore wells.
- (10) Preparation of estimates for various types of bores & completion report.
- (11) Under ground water recharge activities & methods including rain water harvesting.
- (12) Yield improvement techniques used in water sector viz. bore blasting, hydro fracturing etc.
- (13) Various types of pumps used in water supply & sewerage projects with their efficiency prediction (as per HIS) including their selection & design / sizing including performance.
- (14) Various types of valves & expansion joints & their sizing / selection.
- (15) Water hammer control devices.
- (16) Flow & pressure measurement devices, their selection & application.
- (17) Auxiliary equipments used in water supply pumping systems viz. Vacuum pumps, dewatering pumps etc.
- (18) Selection & design of electrical equipments used for pumps like induction motors, transformers, switchyard equipment, cables etc.
- (19) Selection & design of PCC – MCC panels.
- (20) Power factor improvement & APFC panels.
- (21) Switchgears & protective relays, starters, contactors, metering / measuring instruments.
- (22) Earthing & lightning protection system & applications.

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- (23) Assessment of requirement of power for pumping system.
- (24) Operation & maintenance of electro mechanical apparatus of water supply pumping system including trouble shooting of pumps & auxiliaries.
- (25) Energy audit & its importance / implications.

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**Syllabus for Professional Examination for AES, AAES & Overseers of GWSSB  
(Mechanical)**

**PAPER – IV**

**Sub: Practical Drawing (Mechanical)**

- (1) Isometric Orthographic, Elevation, Plan, Side-End views of an object of Mechanical Engineering.
- (2) Various types of bolts, nuts, rivets, threads.
- (3) Various types of joints.
- (4) Various types of gauges.
- (5) Lay out of D R / D T H drilling rig.
- (6) Strata chart of tube well & bore well.
- (7) Basic lay out & schematic diagram of pumping system.
- (8) SLD of electrical system.

*B. A. Mistry*

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**Chairman**

Professional Examination Committee

For AE/AAE & J.D.(GJTI)

GWSSB, Gandhinagar