

NDWA 2021: Syllabus for Junior Engineer



Test type: Written Exam (Multiple Choice Questions)
Test period: 2 Hours
Total marks: 100

Syllabus for the post of Junior Engineer

Subject	Topic	Weightage
General English	<ul style="list-style-type: none">Comprehension, One word substitution, Synonyms and Antonyms,Spelling error, Spotting error in sentences,Grammar Noun, Pronoun, Adjective, Verb, Preposition, Conjunction,Use of 'A', 'AN' and 'THE',Idioms and Phrases	5 Questions each 1 mark [5]
General Knowledge	<ul style="list-style-type: none">Indian History, Indian Geography, Indian Economy, Indian Polity & Constitution,Scientific Research, awards,Sports,Current Affairs-India & World	8 Questions each 1 mark [8]
Logical Reasoning	<ul style="list-style-type: none">Analogies - Semantic Analogy, Symbolic / Number Analogy, Figural Analogy,Similarities and differences, word building, relation concepts,Arithmetic number series, Semantic Series, Number Series,Coding and Decoding - small & Capital Letters / numbers coding, decoding and classification	7 Questions each 1 mark [7]
Quantitative Aptitude	<ul style="list-style-type: none">Number System,Time and Work,Averages, Percentages,Profit and loss,Ratio and Proportions,Simple and Compound Interest, Time and Distance	10 Questions each 1 mark [10]
Computer Literacy	<ul style="list-style-type: none">Characteristics of Computer, Computer Organisation including RAM, ROM, File System, Input Devices,Computer Software - Relationship between Hardware and Software,Operating System, MS-Office (exposure of Word, Excel/spread sheet, Power point),Digital Signatures, Application of information technology in Government for E- Governance	5 Questions each 1 mark [5]

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Subject	Topic	Weightage
Estimating, Costing and Valuation	<ul style="list-style-type: none">▪ Estimate, glossary of technical terms, analysis of rates, methods and unit of measurement,▪ Items of work – Earthwork, RCC work, Shuttering,▪ Centre line method, Mid-section formula, Trapezoidal formula,▪ Simpson's rule.▪ Valuation – Value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.	5 Questions each 1 mark [5]
Surveying	<ul style="list-style-type: none">▪ Principles of surveying, measurement of distance, chain surveying, working of prismatic compass,▪ compass traversing, bearings, local attraction,▪ plane table surveying, theodolite traversing, adjustment of theodolite, Levelling,▪ Definition of terms used in levelling, contouring, curvature and refraction corrections,▪ temporary and permanent adjustments of survey instruments,▪ methods of contouring, uses of contour map,▪ tachometric survey, curve setting, earth work calculation, advanced surveying equipment e.g. Total Station, DGPS, GPS etc.▪ Use of Remote Sensing Techniques in planning of WR projects	20 Questions each 1 mark [20]
Geotechnical Engineering	<ul style="list-style-type: none">▪ Soil Type and structure – gradation and particle size distribution – consistency limits.▪ Properties of soils, classification and interrelationship;▪ Compaction behaviour, methods of compaction and their choice,▪ Laboratory and field tests, Earth pressure theory and analysis for retaining walls,▪ Bearing capacity of soil - stability of slope of earth walk.▪ Type and properties of Rocks including laboratory and field testing.	4 Questions each 1 mark [4]
Foundation Engineering	<ul style="list-style-type: none">▪ Types of foundations,▪ Selection criteria for foundation of structures, bearing capacity, settlement,▪ Types of piles and their layout.▪ Foundations on expansive soils, foundation on swelling soils.	4 Questions each 1 mark [4]

Subject	Topic	Weightage
Hydraulics	<ul style="list-style-type: none">Fluid properties,hydrostatics,measurements of flow,Bernoulli's theorem and its application, flow through pipes,flow in open channels,weirs, flumes, spillways, pumps and turbines	4 Questions each 1 mark [4]
Irrigation Engineering	<ul style="list-style-type: none">Definition, necessity, benefits, effects of irrigation, types and methods of irrigation,Water requirement of crops, duty, delta and base period, Kharif and Rabi Crops, Command area, Time factor, Crop ratio, Overlap allowance, Irrigation efficiencies.Different type of canals, types of canal irrigation, canal capacity, canal losses, alignment of main and distributory canals,Canal lining – types and advantages.Canal structures: Description of head regulators, canal falls, aqueducts, metering flumes and canal outlets.Diversion headwork: Description of weirs of permeable and impermeable foundation, Silt and Scour, Kennedy's theory of critical velocity, Lacey's theory of uniform flow.Storage works: Types of dams.Spillways: Spillway types, energy dissipation.	15 Questions each 1 mark [15]
Concrete Technology	<ul style="list-style-type: none">Properties, Advantages and uses of concrete,Cement aggregates, importance of water quality, water cement ratio, workability, mix design, storage, batching, mixing, placement, compaction, finishing and curing of concrete,Quality control of concrete, hot weather and cold weather concreting,	3 Questions each 1 mark [3]
Hydrology	<ul style="list-style-type: none">Measurement of rainfall, rain gauge and related data analysis e. g. Rainfall – Runoff analysis, Thiessen polygon,PMP, precipitation, Evaporation and transpiration,Overland flow, unit and synthetic hydrograph,Floods and their management, flood frequency analysis etc.	10 Questions each 1 mark [10]

Shruti
28.1.2019



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