



Most Urgent/Out Today

No. 9-119/CE/PW/ES-II/2018/450

अंडमान तथा निकोबार प्रशासन

ANDAMAN AND NICOBAR ADMINISTRATION

मुख्य अभियंता का कार्यालय

OFFICE OF THE CHIEF ENGINEER

अंडमान लोक निर्माण विभाग

ANDAMAN PUBLIC WORKS DEPARTMENT

निर्माण भवन / NIRMAN BHAWAN

Port Blair, dated the 23rd January, 2019

Circular

It is to inform that to fill up the 10 post of Junior Engineer (Civil) and 03 post of Junior Engineer (Electrical & Mechanical) in the pay scale of Rs. 9300-34800 + GP-4200/- in PB-2 (Level 6 of VIIth CPC) against the 5% vacancy reserved under Promotion category was called from among the eligible work charged or regular employees of APWD vide this office letter No. 9-119/CE/PW/ES-II/2018/2769 dated 16.05.2018 and 9-114/CE/PW/ES-II/2018/2768 dated 16.05.2018 those who were completed five years of regular service in the grade on the last date of receipt of application i.e. on 18.06.2018 and possessing the minimum education qualifications as prescribed under Para-7 of recruitment rule of the above said posts.

In response to this office circular even number dated 16.05.2018, 05 applicants were applied for the post of Junior Engineer (Civil) and 09 applicants were applied for the post of Junior Engineer (E&M) under 5% promotion category. Accordingly their application were scrutinized by scrutiny committee constituted vide this office order No.1505 dated 03.12.2018.

As per report of the committee, the details of eligible and in-eligible departmental candidates for participating in the Limited Departmental Competitive Examination are furnished as under:

Eligible for Participating in the Limited Departmental Competitive Examination for the post of **JE (C)**:

Sl. No.	Name	Designation	Present Place of Posting	Remarks
1.	Shri K.V Yohannah	D/Man Gr-III (C)	CC-I, PB	Eligible
2.	Shri Ajit Lakra	W.C Beldar	RCD, W/G	Eligible
3.	Smti Anitha Tutty	D/Man Gr-III [C]	SAD, PB	Eligible

In-Eligible for Participating in the Limited Departmental Competitive Examination for the post of **JE (C)**:

Sl. No.	Name	Designation	Present Place of Posting	Remarks
1.	Shri Abdul Rasheed	Work Assistant	PBND	In-eligible (Course not completed)
2.	Smti Sapna Chakraborty	MTS	CE's office, PB	In-eligible (05 years of service not completed as on 18.06.2018)

Eligible for Participating in the Limited Departmental Competitive Examination for the post of **JE (E&M)**:

Sl. No.	Name	Designation	Present Place of Posting	Remarks
1	Shri Debashish Halder	D/Man Gr-III [E&M]	CD-I, Rgt.	Eligible
2	Smti Shyda Bibi (OBC)	D/Man Gr-III (E&M)	CC-I, PB	Eligible
3	Shri Subir Kumar Bala	Work Asstt.	PBND	Provisionally Eligible (subject to receipt of verification of certificates from the Institution)
4	Shri Abdul Rasheed	Work Asstt.	PBND	Eligible
5	Smti G.Evodia John	W.C Beldar	Store Div. ,PB	Eligible
6	Shri V.Raja Kumar	W.C Beldar	CD-I, PB	Eligible
7	Shri Pradip Chakraborty (OBC)	Work Asstt.	WSD, PB	Eligible
8	Smti Sheena	Work Asstt.	WSD, PB	Eligible

In-Eligible for Participating in the Limited Departmental Competitive Examination for the post of **JE (E&M)**:

Sl. No.	Name	Designation	Present Place of Posting	Remarks
1.	Shri Senthil Kumar	MTS	MID, H/Bay	In-eligible (05 years of service not completed as on 18.06.2018)

Further, it is to inform that the question paper will be set in Objective-Multiple-Choice-Type” Question up to Diploma level and in English only for the above cited LDCE. The detail syllabus of the LDCE for the post of Junior Engineer (Civil) is appended under Annexure- A and for the post of Junior Engineer (Electrical & Mechanical) is appended under Annexure- B. The LDCE likely to be conducted during February, 2019 from 10 AM to 12 Noon on any working day, the other details of LDCE will be informed later along-with the Hall Ticket.

The scheme of the above examination, the time allowed and the maximum marks for the above Posts will be as follows:-

SCHEME OF WRITTEN EXAMINATION	NO. OF QUESTION	TOTAL MARKS	DURATION	Marking Scheme		
				Correct option	Wrong option	Not attempted
Objective multiple choice type paper in the concerned subject	100	200	2 Hours	02	0	0

Therefore, it is requested to kindly circulate the same among the respective candidates and claim and objection in this regards, if any should be reached to this office latest by **25.01.2019** positively for further action.

Engineer Officer
To Chief Engineer

To,

1. The Superintending Engineer, CC-I, APWD, Port Blair.
2. The Executive Engineer, SAD, PBND, Store Division, Work Shop Division, CD-I, Port Blair, E&M, Prothrapur, RCD, W/Gunj, MID, HutBay and CD-I. Rangat.
3. The Assistant Director (Admin), CE’s office, PAWD, Port Blair.

Copy to:

1. The Executive Engineer (E&M) Planning, CE’s office, APWD, Port Blair along-with soft copy in pen drive for uploading in the website of APWD and returned the pen drive please.
2. The Deputy Secretary [PWD], A&N Administration, Secretariat, Port Blair for information.
3. Notice Board of CE office.
4. F.No. No. 9-114/CE/PW/ES-II/2018.

Engineer Officer
To Chief Engineer

Syllabus for recruitment of Junior Engineer (Civil):-

1. **Building Materials:** Physical and chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement (Portland), Asbestos products. Timber and Wood based Products, laminates, bituminous materials, paints, varnishes.
2. **Concrete Technology:** Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix design, storage, batching, mixing, placements, compaction, finishing and curing of concrete, quality control, hot weather and cold weather concreting, repair and maintenance of concrete structure, Admixture and additives.
3. **Surveying:** Principles of surveying, working of prismatic, compass and bearings, planetable surveying, theodolite traverse, adjustment of theodolite, leveling and contouring, curvature, refraction correction, permanent adjustment of dumpy level, methods of contouring and uses of a contourmap, tacheometric survey, Curves, Horizontal and Vertical Curves.
4. **Soil Mechanics:** Origin of soil phase diagram, definitions of void ratio porosity, degree of saturation, water content specific gravity of soil grains and unit weights, grain size distribution curves for different soil and their uses, Atterberg's limits, ISI soil classification, plasticity chart, coefficient of permeability, effective stress, consolidation of soils. Classification, shear strength of soils, direct shear test, vane shear test, triaxial test, soil compaction, Lab compaction, Lab compaction test, moisture content and bearing capacity of soil, plate load test standard penetration test.
5. **Theory of Structures:** Elasticity constants, Types of beams, determinate and indeterminate, Bending moment and shear force diagrams of simply supported, cantilever and over hanging beams, Moment of area and moments of inertia for rect. & circular section, bending moments of shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads slope deflection of simply supported and cantilever beams, critical load columns, torsion of circular section.
6. **RCC & Steel Design:** RCC beams, flexural strength, shear strength, bond strength, design of single reinforce beams, lintels, cantilever beams, double reinforced beams, one way slabs two way slabs, reinforced brick work, T-beams, columns, staircases, retaining walls, water tanks steel design, welded connections, riveted joints, design and construction of steel columns, beams roof trusses plate girders.
7. **Hydraulics:** Fluid properties, hydrostatics, measurements of flow, Bernoulli's theorem and its application, flow through pipes, flow in open channels, weirs, flumes spillways, pump and turbines.
8. **Public Health Engineering:** Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, circular sewers oval sewers, sewer appurtenances surface water drainage, sewage treatments.
9. **Transport and Highway Engineering:** Classification of Highway, Structural and geometrical components, Design of various elements of highway, Junction and intersection, Type of curves, Elements of curves, Setting out of curves, Materials for highway their testing and types, Physical, Chemical and Mechanical properties, Classification of traffic, Traffic survey, Important characteristics and Highway Construction.

10. **Port- Harbour and Airport:** Definitions and Classifications, Important Components and their Characteristics, Site Investigation and Requirement, Navigation and Control, Essential Amenities and Requirement.

ANNEXURE-B

SYLLABUS FOR RECRUITMENT OF JUNIOR ENGINEER (E&M)

1. **Basic Electrical Engineering & Electrical Measurements:** Concept of currents, voltage, resistance, power & energy, their units, ohm's law, electrical symbols.
2. **Circuit Laws:** Kirchhoff's law, solution of simple network problems, network theorems and their applications, concept of flux, EMF, reluctance, Electromagnetic induction, self and mutual inductance, A.C fundamental, instantaneous, simple series and parallel A.C circuits consisting of R.L. and C, Measurement and measuring instruments, Analog & Digital ammeters and voltmeters, Extension of range, Wattmeter, Multimeters, Megger, Low Voltage transformers CT & PT.
3. **Electrical Machines:** Basic principles of AC & D.C. Motors & Generators, their characteristics, speed control & Starting of AC & D.C. Motors, losses & efficiency of AC & D.C. Machines, principles of operation, equivalent circuit, voltage regulation, O.C and SC tests, efficiency, auto transformers, Generation of three phase EMF, 3-Phase induction motor, rotating magnetic field. Principle of operation, equivalent circuit, torque speed characteristics, starting and speed control of 3 phase induction motor, fractional KW motors, 1- Phase induction motor, types of AC Motors, DG Sets, operation.
4. **Estimation and costing:** Details of illumination system, details of load distribution, Design of electrical installation & its symbols (internal & external), Energy efficient equipment, energy audit, protection systems of Electrical circuit, Earthing Systems, Testing of Electrical Installations, types of cables – Overhead & underground.
5. **General Distribution:** Types of faults, short circuit current for symmetrical faults, Protection & Switchgear-rating of circuit breakers, principles of arc extinction by oil and air, H.R.C fuses, Protection earth leakage, Bus Bar arrangement.
6. **Lightning Arrestors:** Distribution systems, Comparison of conductor materials efficiency of different systems, utilization of electrical energy, illumination, electric heating, electric welding, electroplating, electric drivers etc.
7. **Renewable Energy: Solar Energy – Direct Uses,** State the concept of solar radiation, Describe the working principle of solar thermal systems, Compare different solar photovoltaic system, Solar Radiation, Sun & Earth, Solar Spectrum, Sun & Earth Movement, Solar Geometry: Concept, Solar Thermal Applications & Its working Principles, Water Heating, Space Heating, Space Cooling and Refrigeration, Power Generation, Distillation. Solar Photovoltaic Conversions: Principle of working of Solar cell, Construction Details containing capacity, size & materials of Solar Photovoltaic System Applications- Solar Lantern, Solar Home System, SPV Street Light, SPV Traffic Signal, Info -display, SPV Power Pack, Stand alone SPV Power Plant, Solar Generators, Building Integrated PV Systems, SPV Pumping Systems **(No derivations & numericals)**.
8. **Introduction to Refrigeration:** Define various terms related to refrigeration, Explain various refrigeration cycles, Explain properties and environmental effects of refrigerants. Definition, Necessity of refrigeration, Concept of heat engine, heat pump and Refrigerator, Unit of refrigeration, C.O.P., EER and refrigerating effect, Non conventional methods of refrigeration like Vortex tube, Pulse tube refrigeration, solar refrigeration. Refrigerants: Classification, Desirable Properties, selection & Nomenclature of refrigerants. Concept of Green House Effect, Ozone Depletion, Global warming. Concept of Ozone Depletion Potential (ODP) & Global Warming Potential (GWP) of different Refrigerants. Eco-friendly refrigerants like R-134a, Hydrocarbon refrigerants. Refrigeration Cycles, Reversed Carnot Cycle and its representation on PV and TS diagram. Air Refrigeration Cycles - Bell Coleman air refrigerator. Representation on PV and TS diagram, Types and applications like aircraft refrigeration using simple air cooling system.

- 9. Air Conditioning & Air Distribution Systems:** Identify various air conditioning systems, Classification of systems: Industrial and commercial Air Conditioning Systems- Window type, split type, central type AC & its plant, Air distribution systems. Duct systems: Closed perimeter system, extended plenum system, Radial duct system, duct materials, requirement of duct materials, losses in ducts, Fans and Blowers- Types, working of fans and blowers , Air distribution outlets, Supply outlets, return outlets, grills, and types of diffusers, Insulation: Purpose, properties of insulating material, Types of insulating materials, Methods of applying insulation, maintenance of AC plants.
- 10. Applications of Refrigeration and Air Conditioning Systems:** Explain various Refrigeration and Air Conditioning systems. Applications of refrigeration and air conditioning in following areas: Domestic Applications, Commercial Applications, Industrial Applications, Automobile Air conditioning systems, Ice plant & cold storage.
- 11. Battery:** Automotive battery construction and operation, battery capacity, Battery ratings, Battery tests Charging System : Need of charging system, Construction and operation of charging system, Alternator principle, construction and working, Starting System, Lighting System, Ignition System and their Components.
- 12. Basic Electronics:** Electronics- Atomic structure of elements. The electron Energy of an electron valence electrons – Free electrons -Voltage source - Constant voltage source - Constant current source.
- 13. Electron Emission:** Electron emission, types of electron emission-Thermion emission – Thermionic emitter.
- 14. Transistors:** Transistor-Transistor action-Transistor symbols-Transistor as an amplifier.
- 15. Regulated D.C. Power Supply:** Ordinary D.C. Power supply, Regulated power supply. Types of voltage regulators - Zenor diode voltage regulator.
- 16. Electronic Instruments:** Electronic instruments, Multi-meters, Applications of multi-meter sensitivity of multi-meter merits & demerits of multi-meter. Meter protection Vacuum tube voltmeter-applications of VTVM-merits and demerits of VTVM.
- 17. Semi Conductor Physics:** Semi conductor Bonds in semiconductor-commonly use semiconductors, energy band description of semiconductors-effect of temperature on semiconductor-intrinsic semiconductor-extrinsic semiconductor-properties of pn junction.
- 18. Semi Conductor Diode:** Semi conductor diode, logic gates, Half wave rectifier-full wave rectifier, zener diode, special diodes, optical diodes, Filters-LC filter, π filter.
- 19. Solid State Switching Circuits:** Switching Circuit-Mechanical Switch Electronic Switch Advantages of Electronic Switches-Switching action of a transistor.
- 20. Working Principle, Advantage & Application of field effect transistors.**
- 21. Working Principle, Advantage & Application of Silicon Controlled Rectifier (SCR).**
- 22. Working Principle, Advantages & Applications of Triace.**
- 23. Working Principle, Advantages & Application of Uni-junction Transistor(UJT).**
- 24. Computer & its applications- Basics of hardware and Software.**
- 25. Flow of Fluids:** Measurement of discharge: flow through pipes friction losses. Forces of jet impinging on vanes, blades, work done and efficiency, classification of pumps.
- 26. Production Engineering:** Foundry-different casting processes, concept of patterns, types of mold making, pouring defect in castings, causes & remedies, welding –classification and types of welding, Testing & defects in welds, Lathes-working of lathes: various tools, operation on lathes, types of lathes, drilling operations performed on drilling machines. Description, Principles of working and various operations on machines tools milling machine, Shaper, grinder, boring & slotting machines, Plating.
- 27. Automobiles:** Classification of automobile vehicles, types of automobile vehicles, Two and four wheeler chassis layout of an automobile vehicle, automobile body types, Layout of vehicle such as front engine rear wheel drive, front engine front wheel drive, rear engine rear wheel drive, four wheels drive etc. their advantages, comparisons, Aerodynamic body shapes & advantages.
- 28. Transmission Systems:** Need and Requirements of transmission system. Its components and their functions of Clutch, Gear box, Propeller shaft, Differential, Axle.

- 29. Control Systems:** Steering System: Purpose of steering system, construction and working of - recirculating ball type and rack and pinion. Wheel Geometry-caster, camber, king pin inclination, Toe In and Toe Out. Power steering. Braking System: Need of braking system, types of automotive braking systems for two and four wheeler vehicles – mechanical, hydraulic and air operated, Hydraulic braking systems: Layout & components of hydraulic braking systems Construction and working of master cylinder and wheel cylinder. Drum braking system, Disc Braking Systems Air braking system: layout and working.
- 30. Suspension Systems, Wheels and Tyres:** types of wheel-spoked, disc, light alloy cast. Types of rims. Tyres-Desirable properties, types-redial ply, cross ply, tubeless. Tyre specifications. Factors affecting tyre life. Wheel alignment and balancing.
- 31. Automobile Air conditioning System:** Introduction, layout of car air conditioning system, components of a system, working of a system, parameter control (Humidity, temperature, purity of air) required. Important precautions while using AC system.
- 32. Types of measurement, classification of instruments Static terms and characteristics-** Range and Span, Accuracy and Precision, Reliability, Calibration, Hysteresis and Dead zone, Drift, Sensitivity, Threshold and Resolution, Repeatability and Reproducibility, Linearity. Measurement of error-Classification of errors, environmental errors, signal transmission errors, observation errors, operational errors.
- 33. I.C. Engine:** Explain the combustion and ignition method of I. C. Engine. Classification and Application of I. C. Engines. Four stroke Engines, Construction and working, valve timing Diagram, Turning moment diagram. Brief description of I.C. Engine combustion (SI & CI), scavenging, preignition, detonation, supercharging, turbo charging, air fuel ratio requirements, M.P.F.I., Types of sensors, fuel injection pump, battery ignition in SI Engines.
- 34. I.C. Engine Testing and Pollution Control:** IC Engine Testing - I.P., B.P. Mechanical, Thermal etc., List of fuel, lubricant additives and their advantages. Pollution Control Pollutants in exhaust gases of petrol and diesel engines, their effects on environment, exhaust gas analysis for petrol and diesel engine, Catalytic Converter, Bharat stage III, IV norms.
- 35. Air Compressor:** Explain the concept of single and multistage compressor. List the methods of energy saving. Introduction Uses of compressed air, Classification of air compressors, Definitions of Pressure ratio, Compressor capacity, Free Air Delivered, Swept volume. Reciprocating Air Compressor, Rotary Compressor.
- 36. Corrosion:** Definition of corrosion, Types of corrosion. Atmospheric Corrosion: Definition, mechanism of oxidation corrosion, types of oxide films and their significance, factors affecting rate of atmospheric corrosion. Immersed Corrosion: Definition, mechanism of immersed corrosion by galvanic cell action-with evolution of hydrogen gas and absorption of oxygen gas, factors affecting immersed corrosion.
- 37. Protection of metals by:** Modification of properties of metal, electrochemical protection by sacrificial anodic protection and impressed current cathodic protection, use of protective coatings. Application of metallic coatings: By galvanising, tinning, metal spraying, electroplating, metal cladding, cementation- sherardizing, chromising, colourising. Application of non-metallic coatings: paint-definition, characteristics, constituents of paint and their functions.
- 38. Fuels:** Properties of fuels: Definition of a fuel, calorific value and ignition temperature. Characteristics of a good fuel, Classification of fuels with suitable examples, advantages and disadvantages of solid fuels, liquid fuels and gaseous fuels. Classification of fuels: Solid fuels: Analysis of solid fuel - proximate analysis for determination of moisture, volatile matter, ash and fixed carbon, significance of proximate analysis, determination of gross calorific value by using Bomb calorimeter. Liquid fuels: Origin, fractional distillation of crude petroleum, boiling range, composition, and applications of petroleum fractions

obtained, composition, properties, applications of-Biodiesel. Gaseous fuels: Composition, properties, applications of- Biogas, LPG, CNG.

- 39. Lubricant:** Definition of lubricant, functions of lubricants. Classification of lubricant, & method of Application. Selection of Lubricants for road rollers, sewing machine, concrete mixer, I.C engine, cutting tools, gears.
- 40. Simple Machines:** Find Efficiency of given machine, Definitions of Simple machine, compound machine , load , effort , mechanical advantage, velocity ratio , input of a machine ,output of a machine efficiency of a machine , ideal machine, ideal effort and ideal load, load lost in friction, effort lost in friction.
- 41. Industrial Safety and Legislative Acts:** Safety Management, Causes of accidents, Types of Industrial Accidents, Preventive measures, Safety procedures, Industrial Legislation - Necessity of Acts, Important Definitions & Main Provisions of following acts: Indian Factory Act, Workman Compensation Act, Minimum Wages Act. Inventory Concept, its classification, functions of inventory, ABC Analysis - Necessity & Steps, Economic Order Quantity Concept, graphical representation, determination of EOQ, Standard steps in Purchasing, Modern Techniques of Material Management. Material Resource Planning (MRP) - Functions of MRP, Input to MRP, Benefits of MRP. Enterprise Resource Planning (ERP) - Concept, list of modules, advantages & disadvantages of ERP.
- 42. Materials Management:** Inventory Concept, its classification, functions of inventory, Standard steps in Purchasing, Modern Techniques of Material Management- Material Resource Planning (MRP) - Functions of MRP, Input to MRP, Benefits of MRP, Enterprise Resource Planning (ERP) - Concept, list of modules, advantages & disadvantages of ERP
- 43. Quality Management:** Meaning of Quality, Quality Management System - Activities, Benefits, Quality Control - Objectives, Functions, Advantages, Quality Circle - Concept, Characteristics & Objectives, Quality Assurance – Concept, Quality Assurance System, Meaning of Total Quality and TQM, Components of TQM – Concept, Elements of TQM, Benefits, Modern Technique & Systems of Quality Management like Kaizen,5'S,6 Sigma, ISO 9001:2000 - Benefits, Main clauses.
- 44. Basics of Oil Hydraulic System:** Identify various components in simple oil hydraulic circuits. List the types of various components in simple oil hydraulic circuits. Explain the construction and working principle of various components in simple oil hydraulic circuits. Contents, General layout, Applications, Merits and limitations of oil hydraulic systems, Overview of essential properties of oils used in oil hydraulic circuits, Construction, working principle, applications and symbols of Vane pump, gear pump, Gerotor pump, screw pump, piston Pump.
- 45. Basic Design Considerations:** Design philosophy and Procedures, General Considerations in Design, Types of loads, concepts of stress ,strain, Stress – Strain Diagram for, Ductile and Brittle Materials, Types of Stresses such as Tension, Compression, Shear, Bearing pressure, Intensity, crushing, bending and torsion, Principle Stresses (Simple Numericals), Concept of Creep, Fatigue, S-N curve, Endurance Limit.
- Properties of Engineering materials:** Designation of materials as per IS and introduction to International standards, advantages of standardization, use of design data book, use of standards in design and preferred numbers series. Distortion energy theory.
- Modern Design considerations:** Design for safety, Ecology, societal consideration & Concept of Product Design, System Design & Creativity in Design, Ergonomics and aesthetic considerations in design.
