

PRESS NOTE

In continuation of Vacancy Notice dated 10.10.2016 published in the Daily Telegrams on **21.10.2016**, the date of Written Examination, Syllabus & Issue of Hall Tickets etc. for information of eligible candidates to the Post of **Junior Engineer, Chageman and Transport Officer** in the Transport Department are as under:

I. Date of Written Examination:

- (i) **Chageman (1 Post)** - **27.07.2017**
- (ii) **Junior Engineer (8 posts)** - **27.07.2017**
- (iii) **Transport Officer (1 Post)** - **28.07.2017**

II. Syllabus for the post of Chageman, Junior Engineer and Transport Officer.

(Maximum Marks – 100)

Automobile Engineering

1. **Introduction to Automobiles:** Classification of automobile vehicles, types of automobile vehicles. Types of automobile power plants.
2. **Transmission Systems:** Need and Requirements and its components and their functions. Clutch, Gear box, propeller shaft, Differential, Axles.
3. **Control Systems:** Steering, Braking System.
4. **Suspension Systems, Wheels and Tyres:** Necessity and Classification of Suspension Systems; Wheels and Tyres.
5. **Electrical Systems:** Battery; Starting System; Lighting System; Ignition System and their Components.
6. **Automobile Air conditioning System.**

Thermal Engineering

1. **Fundamentals of Thermodynamics:** Concepts of pure substance, types of systems, properties of systems; Work, Heat Transfer and Energy; Law of Thermodynamics and their applications.
2. **Ideal Gases:** Concept of Ideal gas; Ideal gas processes.
3. **Steam and Steam Boiler:** Generation of steam, Properties of steam and use of steam table, Dryness fraction, Degree of superheat; Vapour processes; Steam Boiler; Boiler mountings and accessories.
4. **Steam Nozzles and Turbines:** Steam nozzle; Steam turbine; Compounding and governing of turbines and its types.
5. **Steam Condensers and Cooling Towers:** Dalton's law of partial pressure; Construction, working, function and classification of condensers; Sources of air leakage and its effect, concept of condenser efficiency, vacuum efficiency; Cooling Towers.
6. **Heat Transfer:** Modes of heat transfer, Fourier's law, thermal conductivity; Radiation:- Thermal Radiation, absorptivity, Transmissivity; Heat Exchangers.

Power Engineering

1. **I.C. Engine:** Power Cycles; Classification and Application of I.C. Engines.
2. **I.C. Engine Testing and Pollution Control:** Engine terminology, Engine Testing; List of fuel, lubricant additives and their advantages; Pollution Control.
3. **Air Compressor:** Compressor terminology; Reciprocation Air Compressor; Rotary Compressor.

4. Gas Turbine and Jet Propulsion: Classification and applications of gas turbine; Methods to improve thermal efficiency; Jet Propulsion.

5. Refrigeration and Air-Conditioning: Refrigeration terminology and systems; Psychrometry; Air conditioning systems.

Production Engineering

1. Lathe Machine: Basics, classification and basic parts of centre lathe & their functions, Lathe operations; Cutting tool nomenclature & tool signature, cutting parameters.

2. Drilling Machine: Basics, classification, basic parts of drilling machine and their functions, twist drill nomenclature, drilling machine operations.

3. Milling & Gear Cutting: Milling: Basics, classification, basic parts of milling machine & their functions: Standard milling cutters; milling operations; cutting parameters. **Gear Cutting:** Basics, gear manufacturing methods; universal dividing head & indexing methods; gear shaping & gear hobbing setup, working, advantages, disadvantages, applications, gear finishing methods.

4. Grinding: Basics, Classifications, Grinding operations; Grinding wheel composition, types and shapes and selection criteria, grinding wheel dressing & truing; designations; safety precautions.

5. Super Finishing processes: Method of surface finishing like honing, lapping, burnishing, polishing and buffing – setup, advantages, limitations and applications.

Manufacturing Technology

1. Forming Process: Drop forging; Rolling; Extrusion.

2. Press Working: Press classification & operations; Die set components and types of dies; Forming Operations.

3. Casting Processes: Pattern making; Moulding; Casting.

4. Welding: Basics & classification of welding processes; Various welding operations; Soldering and brazing.

5. Plastic moulding methods: Introduction, Properties & types of plastics, plastic moulding methods compression moulding, injection moulding, blow moulding, extrusion, vacuum forming and calendaring.

Material Science

1. Engineering Materials – Structure and Properties: Crystal structures, unit cell and space lattice, Concept of packing efficiency; Classification and properties of materials; Steels and Cast irons as alloys of iron and carbon.

2. Equilibrium Diagrams: Concept of phase, pure metal, alloy and solid solutions; Solidification of pure metal and Alloys; Iron Carbon Equilibrium diagram.

3. Heat Treatment of Steels: Transformation in steel on heating under equilibrium conditions; Annealing; Normalizing; Hardening; Tempering; Surface Heat Treatment.

4. Steels and Cast Irons: Broad Classification of steels, Plain carbon steels, Alloy Steels; Cast Irons; Specifications of steels and cast Irons.

5. Non-ferrous Metals and Alloys: Chemical compositions, properties and applications Copper alloys; Aluminium alloys; Bearing materials.

6. Non Metallic Materials: Polymeric Materials; Thermoplastic and Thermosetting Plastic materials; Rubbers; Ceramics, Glasses, Glass Wool, Composite Materials, Nano materials.

7. Powder Metallurgy & Nondestructive Testing: Powder Metallurgy; Non-destructive Testing.

Engineering Drawing

Projection of Lines, curves and planes; Projection of Solids; Sections of Solids; Developments Surfaces; Sectional Orthographic and missing views; Free Hand Sketches of machine elements.

Strength of Materials

- 1. Mechanical Properties of Materials, Simple Stresses & Strains:** Mechanical properties and Concept of Simple stresses & strains; Composite section; Buckling of long columns.
- 2. Principal Stresses and Planes:** Concept of Principal stresses and Principal planes; Thin Cylindrical shell.
- 3. Bending Moment & Shear Force:** Concept & definition of Shear force & bending moment.
- 4. Moment of Inertia:** Concept & definition of Moment of inertia; Parallel & perpendicular axes theorem.
- 5. Bending Stresses:** Theory of simple bending; Concept of direct & transverse shear stress.
- 6. Direct and Bending Stresses:** Concept of Axial load, eccentric load, direct stresses, bending stresses, maximum & minimum stresses.
- 7. Torsion:** Concept of Pure Torsion; Solid and Hollow Shafts.

Engineering Mechanics

- 1. Simple Machines:** Definitions; Analysis; Velocity Ratio for simple machines.
- 2. Force Systems:** Fundamentals and Force Systems; Resolution of a force and Moment of a force.
- 3. Composition of Forces:** Analytical method; Graphical method.
- 4. Equilibrium:** Equilibrant and Lami's Theorem; Beams.
- 5. Friction:** Definition; Equilibrium of body on Horizontal and inclined plane.
- 6. Centroid and Centre of Gravity:** Centroid; Center of Gravity.

Fluid Mechanics and Machinery

- 1. Properties of Fluid and Fluid Pressure:** Properties of Fluid; Fluid Pressure Measurement.
- 2. Fluid Flow:** Types of fluid flows; Continuity equation; Bernoulli's theorem and their applications.
- 3. Flow Through Pipes:** Laws of fluid friction; Darcy's equation and Chezy's equation for frictional losses; Minor losses fittings and valves; Hydraulic gradient line and total energy line; Hydraulic power transmission through pipe.
- 4. Impact of Jets:** Impact of jet on fixed vertical, moving vertical flat plates, curved vanes with special reference to turbines and pumps.
- 5. Hydraulic Turbines:** Layout and features of hydroelectric power plant, surge tanks and its need; Classification and their applications; Construction and working principle of Pelton wheel, Francis and Kaplan turbine; Draft tubes; Concept of cavitation in turbines; Work done, Power, efficiency of turbine.
- 6. Pumps:** Centrifugal Pumps: Reciprocating Pump.

Theory of Machines

- 1. Fundamentals and type of Mechanisms:** Kinematics of Machines: Inversion of Kinematic Chain.
- 2. Velocity and Acceleration in Mechanisms:** Concept of relative velocity and relative acceleration of a point on a link, angular acceleration, inter-relation between linear and angular velocity and acceleration; Drawing of velocity and acceleration diagram of a given configuration, diagrams of simple Mechanism.
- 3. Cams and Followers:** Concept, definition and applications of Cams and Followers, their terminology and Classification; Different follower motions and their displacement diagrams; Drawings of cam profile.
- 4. Power Transmission:** Belt Drives; Chain Drives; Gear Drives.
- 5. Flywheel and Governors:** Flywheel; Governors; Comparison between Flywheel and Governor.
- 6. Brakes and Dynamometers:** Function, types and comparison of brakes and Dynamometers; Construction and working of brakes and Dynamometers; Braking force and braking torque and power for shoe and band brake.
- 7. Clutches and Bearings:** Function, types and construction of Clutches and Bearings.
- 8. Balancing:** Concept of balancing; Balancing of single rotating mass and several masses revolving in same plane.

III. Issue of Hall Tickets - Candidates should collect their Hall Ticket from the office of the Assistant Director(Admn), Directorate of Transport, Port Blair on 20.7.2017, 21.07.2017 & 24.07.2017 in between from 10 am to 4 pm. Time and Venue of written examination will be mentioned in the Hall Tickets. No individual correspondence will be made in this regard.

**Assistant Director (Admn).
Directorate of Transport.**

E-mail: dirtpt@and.nic.in

Ph/Fax: 03192 – 230225

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ANDAMAN & NICOBAR ADMINISTRATION
ifjogu funs'kky;
DIRECTORATE OF TRANSPORT

F.No.MT/81-43/Estt /2016/

Port Blair, dated the June, 2017

To

The Director (IP&T)
A&N Administration
Port Blair

Sub:- Publication of **Press Note** in the Daily Telegrams – Reg.

Sir,

I am directed to forward herewith a “**Press Note**” containing the date alongwith the syllabus for the written examination etc. for the recruitment of Junior Engineer, Chargeman and Transport Officer with the request that the same may kindly be published in the Daily Telegrams for two consecutive days preferably on **20.06.2017 & 21.06.2017**.

Yours faithfully

Assistant Director (Admn)

Copy to:

1. The Chief Editor “The Daily Telegrams” with the request to publish the above **Press Note** in the Daily Telegrams for two consecutive days preferably on **20.6.17 & 21.6.17**.
2. The News Editor, All India Radio, Port Blair with the request that suitable new items as mentioned above may kindly be broadcast in the New Bulletin of All India Radio, Port Blair.
3. The News Editor, Doordarshan Kendra, Port Blair with the request that suitable news items as mentioned above may kindly be broadcast in the News Bulletin of Doordarsan, Port Blair.
4. PS to Secy-cum-Director(T) for information to Secy-cum-Director(T)
5. The Mechanical Engineer (Nodal Officer), Directorate of Transport, Port Blair for information and necessary action.
6. The Training & Placement Officer, DBRAIT for information necessary action.

Assistant Director (Admn)

