PUBLIC SERVICE COMMISSION, WEST BENGAL

161A, S.P. Mukherjee Road, Kolkata – 700 026

Important Announcement

Recruitment to the post of **Inspector of Factories** in West Bengal Factories Service under the Labour Department, Govt. of West Bengal against Commission's **Advt. No. 12(1) / 2015** is scheduled on the **26th August, 2016** at the Examination Halls of the Public Service Commission, West Bengal.

Scheme of the Preliminary Screening Test is as follows:-

Type of Test – M.C.Q.

No. of questions – 100

[25 no. of questions from each stream of (i) Civil Engineering, (ii) Electrical Engineering, (iii) Mechanical Engineering; remaining 25 questions from Factory Act / Rules]

Full Marks – 100

Duration – 1 hour 30 minutes (From 12:00 noon to 1:30 p.m.)

N.B.: There will be negative marking; 1/3rd for each wrong answer.

Downloading of e-admission certificate will be commencing on and from the **18th August, 2016.** All the candidates whose applications are received through on-line may provisionally appear at the P.S.T. Candidates facing any problem in course of downloading the e-admission certificate etc. may visit Commission's office on **23rd & 24th August, 2016 in between 11:00 a.m. & 3:30 p.m.**

Syllabus for the above-mentioned test is as follows-

SYLLABUS FOR PRELIMINARY SCREENING TEST FOR RECRUITMENT TO THE POST OF INSPECTOR OF FACTORIES IN WEST BENGAL FACTORIES SERVICE UNDER LABOUR DEPARTMENT, GOVT. OF WEST BENGAL

I. THEORY AND DESIGN OF STRUCTURES

a) Theory of structures and strength of materials :

(i) Solid Mechanics – properties of material, Mohr's circle of stress-strain, plain stress & strain, combined stress, Elastic theories of failure, simple bending, shear, torsion of circular and rectangular sections, columns and struts, moving loads and influence lines for shear force and bending moment for simple and continuous beams and frames.

(ii) Structural Analysis – Analysis of determinate structures. Different methods of analysis of indeterminate structures – moment distribution, slope-deflection.

b) Steel Design – (Design of Steel Structures) :-

Principle of working stress method, Design of all types of connection, Simple members, Built up sections and frames, Design of Industrial structures and Multistoried frames.

c) Design of Reinforced concrete and Masonry Structures :-

Quality control

II. FLUID MECHANICS AND HYDRAULICS

Bernoulli's theorem, flow through conduits, flow through open channels, Hydraulic jump, flow through pipes and losses in pipe flows.

III. SOIL MECHANICS AND FOUNDATION ENGINEERING

Types of foundation, selection criteria, bearing capacity, settlement

IV. SURVEYING

Map preparation by photogrammetry, Remote sensing

V. CONSTRUCTION MATERIALS, PRACTICES, PLANNING AND MANAGEMENT

Materials Handling equipment

VI. ENVIRONMENTAL ENGINEERING

(a) Water Supply Engineering :

Water uses, Quantity requirements, potable water quality, sources of water, ground water hydraulics.

Principles and methods of design of distribution systems, service reservoirs, and Intakes for urban and rural water supply.

(b) Waster Water Engineering :

Sanitary Waster Water and Stormwater run off : Quantity estimation, Sewerage systems

(c) Environmental pollution and control :

Atmospheric poilution : Types of pollutants, Natural and man-made sources, Effects or air pollution, unit systems; rudiments of control methods; Elements of noise pollution.

VII. ENGINEERING MECHANICS

Alemberts principle, Methods of momentum, work, power and energy Mass moment of inertia

VIII. PHYSICS

Relationships among different elastic constants. Bending moment. Cantilever problems.

IX. MATHEMATICS

Review of limit, continuity and differentiability. Successive differentiation. Rolle's Theorem. Mean value theorems.

Limit and continuity

X. APPLIED MECHANICS :

Belt, pulley and Chain Bodies in rolling contact.

XI. ELECTRONICS

Elementary physics of semiconductor materials, p-n junction semiconductor diode, zener diode, bipolar junction device-transistor.

Uses of operational amplifiers.

IC voltage regulator : A typical industry standard (e.g. 723 or 3085) and its use as both dissipative and switching regulator, current limiting ordinary feedback.

XII. CIRCUIT THEORY

Applications of network theorems

XIII. ELECTRICAL ENGG. MATERIALS

States of engineering & insulating materials and their applications.

Semiconductor, Intrinsic and impurity semiconductors

XIV. HYDRAULICS AND WATER POWER

Fluid Machineries, Reciprocating pumps, Centrifugal pumps

XV. ELECTRICAL MACHINES

D.C. Generator

A.C. Machines : Frequency of the induced emf. Mechanical and electrical angles

Basic principle of operation of synchronous and Induction machines :
Single phase A.C. excitation

Transformers – Constructional details only

XVI. POWER PLANNING & DISTRIBUTION

Electricity acts, rules and codes standards followed in power supply.

Earthing practice , Lightning arrester, Lift, Pump,

XVII. ELECTRIC POWER UTILISATION

Electric Welding, resistance welding and equipment for such welding

XVIII. POWER SYSTEMS PROTECTION AND SWITCHGEAR

Different forms of Switchgears and their functions

XIX. ENGINEERING MECHANICS

Centre of mass and centre of gravity, shear force and bending moment diagrams .

XX. THERMODYNAMICS

Definitions of Heat Engine, Heat Pump, Thermal Efficiency, COP, Carnot Cycle

Second law of Thermodynamics; Statements and Corollaries, Entropy, Concept of Reversibility and irreversibility.

Second law analysis of control, Volumes, Concept of Entropy Generation. Reversible work availability & irreversibility.

XXI. MATERIALS & METALLOGRAPHY

Strengthening mechanism, heat treatment of steels, cast iron and carbon steels, important alloy steels, important non-ferrous alloys.

XXII. FLUID MECHANICS

Steady and unsteady flow

XXIII. DESIGN OF MACHINE ELEMENTS

Introduction to design, factor of safety, calculation of allowable stress under various types of loading stress-concentration.

XXIV. DYNAMICS OF MACHINE

Fly-wheels & governors

Balancing of rotating and reciprocating masses.

XXV. I.C.ENGINES AND GAS TURBINE

Principle of working, basic engine type

XXVI. MACHINE TOOLS

Machine tool design; Features of construction, function and principles involved in the design c machine tool elements; layout of speeds for various machine tools drives.

XXVII. ENGINEERING DRAWING

Sectional view of simple parts made on lathe.

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Re: Syllabus on Factories Act and Factories Rules/Procedure/Law for recruitment of Inspector of Factories in West Bengal Factories Services under Labour Department; Govt. of West Bengal

1) Short title, extent and Commencement of both the Factories Act and West Bengal Factories Rules.
2) Interpretation as per Section 2 of the Factories Act.
3) Notice by occupier as per Section 7 of the Factories Act, before occupy or use any premises as a Factory.
4) General duties of the Occupier as per Section 7A of the Factories Act.
5) Power of Inspector as per provisions of Section 9 of the Factories Act.
6) Provisions related to maintenance of Health under Chapter III of the Factories Act (Sections 11 to 20)
7) Provisions related to Safety under Chapter IV of the Factories Act (Section 21 to 41) including appointment of Safety Officer
8) Provisions relating to Hazardous Process under Chapter IVA of the Factories Act. (Section 41A to 41H)
9) Provision relating to Welfare facilities under Chapter V of the Factories Act (Section 42 to 50)
10) Special provisions under Chapter IX of the Factories Act (Section 85 to 91A)

Reference Book - Factories Act 1948 ammended uptodate