SYLLABUS OF WRITTEN TEST FOR THE POST OF SENIOR ENGINEERS IN E-2 GRADE NOTIFIED VIDE RECRUITMENT NOTIFICATION NO. 1 / 2015 IS GIVEN BELOW –

PART A – GENERAL APTITUDE AND REASONING (30 questions) 30 marks

PART B – GENERAL ENGINEERING ASPECTS (40 questions) 40 marks

This part may consist of questions from the following topics –

- Power System Design viz. Generation, Transmission and Distribution.
- Electricity Act, National Tariff Policy, National Grid Code, National Electricity Plan and Central & State Regulations.
- Various power conversion cycles like Rankine, Braton, Stirling etc.
- Electrical Circuits and Measurements
- Semiconductor devices and its Applications
- Transmission line parameters and its losses
- Different types of Cables and Insulators, Sizing, Losses etc.,
- Substation, Grounding system, Distribution system, Protection devices, etc.
- Grid instability issues with Renewable Energy.

PART C – SUBJECT RELATED (80 questions) 80 marks

This part may consist questions from the following topics –

Basics of Renewable Energy:

- National and global energy scenario and issues with fossil fuel utilization.
- Different renewable sources of energy, their origin, basic characteristics and resource assessment.
- Solar Radiation and Resource Assessments.
- Government Policies and Programmes for development and Commercialization Renewable Energy in India.
- Thermo-chemical and bio-chemical conversion of biomass, bio-diesel.
- Wind Energy: availability in the wind, Betz limit, conversion systems-horizontal axis and vertical axis turbines.
- National Action Plan on climate change and National Solar Mission.

Solar Photovoltaic Devices and Systems:

- National and International perspective on the deployment of solar PV technologies.
- Photovoltaic effect and photovoltaic materials.
- Solar cells and their characterization.
- Crystalline and thin film solar cells, multi junction solar cells.
- Concentrator photovoltaic systems.
- Photovolatic power generation (large grid connected as well as rooftop)
- Decentralized applications: solar lanterns, home systems, solar pumps, mini/micro-grids and other applications.
- Sizing and system designing of solar PV systems.

- Solar PV – Wind hybrid systems.
- Different types of invertor and topologies.
- Different types of batteries and its application in Solar.
- Remote Monitoring applications for Solar Power Plants.

Solar Thermal Technologies:

- Solar collectors / Solar concentrators.
- Solar selective coatings.
- Basic concepts of technologies for solar thermal power generation viz. Parabolic Trough, Parabolic Dish, Fresnel Lens, Linear Fresnel Reflector, Compound Parabolic Concentrator, and Central tower receiver system.
- Solar industrial process heat systems including solar cooling and steam generation for cooking.
- Solar thermal storage systems and materials.

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