

SYLLABUS FOR GENERAL AWARENESS

General Awareness:

Geography, history, science, economics, sports, constitution, politics, history, culture etc.
with due consideration to current Affairs

SYLLABUS FOR JR. OVERMAN

- a) **General Safety and Legislation-** Duties and responsibilities of workmen, competent persons and officials (excluding Managers, Asstt. Managers, Engineers and Surveyors). Discipline amongst workers, and control of staff.

Provisions of the Coal Mines Regulations, 1957 and Rules relating to Mine Working ; Explosives and Shot-firing, Haulage; first Aid, General Knowledge of regulations and rules relating to ventilation, precautions against danger from fire, dust, gas and water; and of other provisions, the enforcement of and compliance with which is and can be responsibility of Overman.

Writing of reports required to be made by Overman under the regulations. Dangerous occurrence in mines and how to deal with them. Accidents, their causes and prevention. Accident reports. Disturbing the place of accident. Mine Rescue. Physiological effect of mine gasses. Rescue equipment. First Aid. Sanitation and health. Miners 'diseases', their main symptoms and prevention.

- b) **Methods of working-** Nature of occurrence of Coal, Geological disturbances and their effect on working conditions; dangers and precautionary measures while approaching the same.

The purpose and utility of boreholes in mines. Shaft sinking safety devices, Shaft supports, temporary and permanent in sinking and working shafts. Examination of shafts and outlets.

Opencast methods of mining- Mechanized and hand-cut working. Benching and other safety precautions.

Underground mining- General principles of pillar and stall method and long wall work. Multi-section work. Methods of depillaring under different conditions. Stone drifting.

Support of strata- roadway and face supports, their types, setting, withdrawal etc. Systematic support rules. Packing and stowing.

Elements of roof control- Protection of surface structures, working beneath statutorily restricted areas and surface structures. Gates and fencing; different kinds of fences.

Inspection of workings and roadways. Travelling roadways; their maintenances and inspection. Reading of statutory plans. Use and safe handling of explosive in coal and stone, in gassy and non-gassy mines; simultaneous shot firing.

- c) **Ventilation and precautions with respect to Explosions, Fires, Inundation**- Natural and mechanical ventilation. Ventilation of headings and sinking shafts. Siting of auxiliary fans underground distribution, measurement and control of air in mines. Reading of Anemometer. Calculation of areas and volumes. Maintenance of ventilation appliances.

Elementary knowledge of causes, prevention of firedamp and coal dust explosions. Limits of inflammability of firedamp and coal dust.

Pollution of air and irruption of gasses in mines. Occurrences, properties, characteristics, detection and measurement of firedamps and noxious gases. Sampling of air, irruption of gasses and pollution of air in mines. Determination of environmental conditions.

Suppression and treatment of coal dust. Suitability of stone dusts. Sampling and analysis of road dusts.

Elements of design of flame and electric safety lamps; their use, examination and maintenance. Fires and spontaneous heating. Elements of preventing, detecting and controlling mine fires. Scaling off fire-areas, fire stoppings and their examination. Precautions against outbreak of surface fires. Firefighting, both on surface and belowground. Inspection of old workings. Sources of danger from surface and underground water. Precautions to prevent inundation and irruption of water. Boring machines for exploratory workings. Water dams. Water danger plans.

Recovery of mines after explosions, fires and inundations. Precautionary measures during reopening and dewatering of mines.

- d) **Elements of Mining Machinery**- Safety aspect and safe use of different kinds of machinery used in mines. Brakes.

Use of steam engines. Application of electricity in mines. Safety precautions. Use of internal combustion engines in mines. Winding equipments; ropes and guides. Signaling and decking arrangements. Safety devices. Examination of winding equipments and shaft fittings.

Haulage and transport; Type of haulages, Rope and locomotive haulages, Self-acting inclines, Haulage roads and roadways, Rails and tracks; their maintenance and inspection. Pit-tubs, Signaling, safety devices, Unsafe practices, Derailments.

Drainages of water and water lodgments. Types of pumps. Principle and syphone.

SYLLABUS FOR MINING SIRDAR

- 1) Methods of examining roof and sides of working places and roadways etc.
- 2) Methods of timbering and setting support, withdrawal and supports.
- 3) Shot firing and transport and use of explosives in mines.
- 4) Ventilation and mine gases-elementary.
- 5) Provisions of the Coal Mines Regulations, 1957, Rules and Byelaws made under the Mines Act-1952 relating to the safety of persons employed in mines in general and to the duties of Sirdars and Shot firers in particular.

SYLLABUS FOR SURVEYOR (MINING)

- I) Chain Surveying.
- II) Plain Table Surveying
- III) Traversing (Underground/Surface)
- IV) Triangulation
- V) Correlation of Underground Working with surfaces feature.
- VI) Leveling
- VII) Tachometry.
- VIII) Meridian and their measurement
- IX) Setting out Curves, alignment, Centre lines for underground working, vertically of shafts and structure etc.
- X) Use, construction and adjustments of Instruments----Dial Level, Theodolites, Electronic Distance Measuring equipment, Chain, Tape, Staff and Plan meter.
- XI) Permissible errors and adjustment for traversing, level etc.
- XII) Plans and Section--- Preparation, use and storage, Representative fraction (RF), construction of Diagonal scale.
- XIII) Provisions under Coal Mines Regulations 1957 related to "Plans and Sections" under Chapter VI and other relevant provisions under C.M.R 1957 and circulars issued by Directorate General of Mines Safety.
- XIV) Problems:
 - a) Geological Faults.
 - b) Bore-hole deviation.
 - c) Bearing and Co-ordinates.
 - d) Leveling/cutting and filling.
 - e) Area and volume of regular and irregular bodies including extraction of coal/over Burden/stock etc.
 - f) Height and Distance.