

# SYLLABUS

## (Mining Sirdar T&S Gr-C)

<b>PART -A</b>	<b><u>GENERAL ASSESSMENT</u></b> i. General Knowledge and Current Affairs ii. Reasoning & Mathematical Ability iii. Awareness about Coal Industries	20 questions	20 Marks
<b>PART -B</b>	<b><u>DOMAIN KNOWLEDGE</u></b> 1) Method of examining roof and sides of working places and roadways etc. 2) Method of timbering and setting of supports, roof bolting, anchorage testing, withdrawals of supports, Preliminary idea about Salvaging of longwall face equipment. 3) Safety issues regarding Stowing operations, working near water bodies or unconsolidated mass. 4) Examination of Sumps. 5) Shot-firing and transport and use of explosives in mines. 6) Ventilation and mine gases- elementary. 7) Safety issues in Opencast Workings over developed pillars, Working at heights, manual handling / handling of heavy materials, Marching of heavy machines. 8) Preliminary idea about Reclamation operation in opencast mining. 9) Preliminary understanding about Safety Management Plan. 10) Provisions of the Coal Mines Regulations 2017 , Rules and Bye-laws made under the Mines Act 1952, relating to the safety of persons employed in mines in general and to the duties of Sirdar's and Shotfirer's in particular. 11) Writing of reports.	80 questions	80 Marks
<b>TOTAL</b>		<b>100 questions</b>	<b>100 marks</b>

# SYLLABUS

## (Jr.Overman T&S Gr-C)

<b>PART -A</b>	<p><b><u>GENERAL ASSESSMENT</u></b></p> <p>i. General Knowledge and Current Affairs            ii. Reasoning &amp; Mathematical Ability            iii. Awareness about Coal Industries</p>	20 questions	20 Marks
<b>PART -B</b>	<p><b><u>DOMAIN KNOWLEDGE</u></b></p> <p>1) <u>General Safety and Legislation</u>            Duties and responsibilities of workmen, competent persons and officials (excluding managers, assistant managers); discipline amongst workers and control of staff. Provisions of the Coal Mines Regulations, 2017, relating to Coal mine working; explosives and shotfiring; loading, transportation and dumping; precautions against danger from fire, dust, gas and water and of other provisions and Rules, enforcement of and compliance of provisions under the regulations to which overman is responsible. Writing of reports required to be made by overman under the regulations. Hazard Identification, risk assessment and risk management, safety management plan. Mine Gases: Generation, Properties and Effects, Detection of Mine Gases, Methanometers and Multi Gas Detectors, Gas Chromotograph, Flame Safety Lamps. Dangerous occurrences in mines and dealing with the same; accidents, their causes and preventions; accident reports; not disturbing the place of accident. Mine rescue; physiological effect of mine gases; rescue equipment and First Aid. Sanitation and health; miners' diseases, their symptoms and preventions.</p> <p>2) <u>Methods of working</u>            Nature of occurrence of coal seams; geological disturbances and their effects on working conditions; dangers and precautionary measures while approaching geological disturbances areas. The purpose and utility of boreholes in mines; shaft sinking; safety devices; temporary and permanent supports in sinking and working shafts; examination of shafts and outlets. Opencast methods of mining; mechanized and manual methods; deep hole drilling and blasting; shovel and dumpers; dragline; bucket wheel excavators; surface miner; benching; maintenance of haul roads; precautions while extracting developed pillars by opencast method and other safety precautions; methods of reclamation; dump management; high wall mining. General principles of bord and pillar and longwall method; multi-section workings; methods of depillaring under</p>	80 questions	80 Marks

	<p>different conditions; mechanized pillar extraction; precautions to be taken while working near/beneath waterlogged areas; roof convergence and convergence measuring devices etc., stone drifting. Elements of roof control Rock Mass Rating (RMR) of roof strata; mechanism of roof bolting; support of roadways; face supports and their types, setting, testing and withdrawal; systematic support rules; packing and stowing; protection of surface structures; working beneath statutorily restricted areas and surface structures. Safe handling and use of explosives in coal and stone; simultaneous short firing; blasting in fire areas in opencast mines; safety precautions. Inspection of workings; inspection and maintenance of haulage and travelling roadways; man riding system and return airways; gates and fences etc. Suppression and treatment, sampling and analysis of mine dust. Sources of danger from surface water and underground inundation; precaution to prevent inundation and irruption of water; water dams, water danger plans. Gates and fencing, different kind of fences. Reading of statutory plans.</p> <p>3) <u>Ventilation, Precautions against Explosions, Fires and Inundation</u>  Natural and mechanical ventilation ; ventilation of headings and sinking shafts; siting of auxiliary and booster fans; distribution, measurement and control of air in mines; estimation of air quantity requirements; methods of coursing of air; anemometer; hygrometer; maintenance of ventilation appliances. Pollution of air; irruption/occurrence of gases in mines; properties of gases; detection and measurement of firedamp and noxious gases; sampling of air; determination of environmental condition; standards of ventilation. Design and construction of flame and electric safety lamps; their use, examination and maintenance. Suppression and treatment of coal dust; suitability of stone dust; sampling and analysis of mine dust. Elementary knowledge of causes and prevention of firedamp and coal dust explosion, limits of inflammability of firedamp. Prevention, detection and control of spontaneous heating / fire; sealing off fire areas; fire stopping and their examination; precautions against outbreak of surface fires; fire fighting on surface and belowground. Inspection of old workings. Sources of danger from surface and underground water, precaution to prevent inundation and irruption of water; precautionary measures while approaching abandoned and water logged areas, boring machines for exploratory work; water dams; water danger plan. Recovery of mines after explosions, fires and inundation; precautionary measures during re-opening and dewatering of mines.</p>		
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<b>TOTAL</b>	<b>100 questions</b>	<b>100 marks</b>	

# SYLLABUS

## (Surveyor T&S Gr-B)

<b>PART -A</b>	<p><b><u>GENERAL ASSESSMENT</u></b></p> <p>i. General Knowledge and Current Affairs            ii. Reasoning &amp; Mathematical Ability            iii. Awareness about Coal Industries</p>	20 questions	20 Marks
<b>PART -B</b>	<p><b><u>DOMAIN KNOWLEDGE</u></b></p> <p>1) Linear and Angular Measurements.            2) Area &amp; Volume calculations            3) Theodolite traversing. Levelling.            4) Trigonometry &amp; Rectangular Co-ordinate calculations.            5) True North determination.            6) Triangulation.            7) Topographic Survey.            8) Tacheometry Survey.            9) Survey Adjustments &amp; Theory of Errors.            10) Contouring.            11) Underground Mine Surveys &amp; Opencast Mine Surveys.            12) Correlation of underground &amp; Surface Surveys. Subsidence Survey.            13) Surveys for Construction and Development Purpose: Responsibilities of Survey Department at the Mine Construction Phase. Setting out Geometrical Elements. Setting out Direction of Workings. Setting out Rail Curves on Surface &amp; Underground. Surveys during Drivage by Approaching Headings.            14) Dip, Strike and Fault Problems.            15) Coal Heap Measurement. Overburden Measurement.            16) Duties &amp; Responsibilities of a Surveyor as per Coal Mines Regulations 2017. PLANS: Types of Plans Statutorily required as per Coal Mines Regulations 2017. Accuracy in Underground &amp; Surface Surveying as per the Statute. Plan Accuracy. Knowledge of various provisions under Coal Mines Regulations 2017 and Circulars of DGMS regarding Mine Surveying.            17) Total Station, DGPS, 3DTLS &amp; Drone surveying in Opencast Mines.            18) Application of Computers &amp; Software in Mine Surveying (SURPAC, LISCAD etc.)            19) Elementary Knowledge in –Remote Sensing &amp; GIS, Geomatics.</p>	80 questions	80 Marks
<b>TOTAL</b>		<b>100 questions</b>	<b>100 marks</b>