Annexure-A

SYLLABUS

Post Name: Mining Sirdar T&S Gr. C

Section -A

(1-70 questions, MCQ of one mark each)-70 Marks

1. Opencast coal mine working; bench formation, dump management and haul road design.
2. Shot firing and transport and use of explosives in mines.
3. Safety issues in opencast workings, transport of material, working at heights, marching and deployment of heavy machines etc.
4. Preliminary idea about reclamation operation in opencast mining.
5. Preliminary understanding about safety management plan.
6. 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 Sirdars and Shot firer's in particular.
7. Writing of reports.
   Etc. as per the courses offered by the Recognized Institutes.

Section -B

(1-30 questions, MCQ of one mark each)-30 Marks

This section is common for all Posts, will carry 30 questions belonging to:-

1. **General Knowledge -**About India and its international relations, General Science etc.
2. **General Awareness** - About Sports, Defense, Books, Prizes, About Indian democracy etc.
3. **Reasoning, Verbal & Mental Ability -** Synonym & Antonym (Hindi/English), Grammar, Relationship etc.
4. **Quantitative aptitude** - Work relationship, Profit &Loss, Speed etc.

Post Name: Mine Surveyor T&S Gr. B.

Section -A

(1-70 questions, MCQ of one mark each)-70 Marks

1. **Linear Measurement:** Instruments for measuring distance ranging; chain surveying; errors in Chaining and plotting; Optical Square.
2. **EDM:** Principles of measurement; types; correction and selection of instruments.
3. Angular Measurement: Prismatic Compass; bearing of lines; Local Attraction; Magnetic Declination.
4. **Plan Table Surveying:** Methods Contouring using plain table and micro-optic alidade.
5. Miners' dials and other compass instruments: dialing; loose and fast needle surveying.
6. **Theodolite:** Modern Micro-Optic theodolite; Measurement of Horizontal and vertical angles; theodolite traversing; traverse calculation; computation of co-ordinates; adjustment of traverse; temporary and permanent adjustment.
7. **Total Stations;** Surveying by total stations, errors, adjustments, and applications.

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8. **Levelling:** levelling Instrument; types of levelling; booking and reduction methods; temporary and permanent adjustment of levels; geometrical, trigonometric and physical levelling; characteristics and uses of contours; method of contouring; traverse; co- ordinates and levelling problems.
9. Tachometry
10. **Controlled surveys:** Triangulation; Trilateration; application of GPS and total station in mine surveying.
11. Use, Care, Testing and adjustments of instruments.
12. **Field astronomy:** Astronomical terms; determination of true bearing by equal altitude method;Gyro Theodolite; Principles and determination of Gyro north, astronomical
    Triangle; conversion of time systems and precise determination of azimuth by astronomical methods.
13. **National Grid:** Map Projections Cassini Lambert's polyconic and universal transfers Mercator; Transformation of Coordinates, vertical projections; mine models.
14. **Geodesy:** Geode, Spheroid and ellipsoid, geo centric, geodetic and astronomical coordinates orthometric and dynamic heights.
15. **Photogrammetry:** Introduction; Scale of a vertical photograph; Photographs Vs Maps; Application of Photogrammetry and remote sensing in Mining.
16. **Theory of errors and adjustments:** Causes and Classification of errors; Inclines of precision; laws of weight propagation and adjustments of errors; adjustments of triangulation figures.
17. Traversing along steep topography with or without auxiliary telescope. Traversing along steep topography with or without auxiliary telescope.
18. Area and volume calculation; different methods and their limitations: earth work and building estimation; laying out of rain and haul road curves; determination of azimuth latitude and longitude.
19. Borehole surveying and calculations, dip, strike, outcrop and fault problems.
20. Types of plans for opencast workings, their preparation, care, storage and preservation: Legislation concerning mine plans and sections; duties and responsibilities of surveyors.
21. Geological map reading.
22. Application of Computers in mine surveying and preparation of mine plan, 3D laser profiling of surfaces and bench/ slopes.
23. Profiling of benches, high wall, dumps.
24. Dump/High wall stability monitoring using different instruments like laser scanner/continuous real time monitor.
    Etc. as per the courses offered by the Recognized Institutes.

Section -B

(1-30 questions, MCQ of one mark each)-30 Marks

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1. **General Knowledge -**About India and its international relations, General Science etc.
2. **General Awareness -** About Sports, Defense, Books, Prizes, About Indian democracy etc.
3. **Reasoning, Verbal & Mental Ability -** Synonym & Antonym (Hindi/English), Grammar, Relationship etc.
4. **Quantitative aptitude -** Work relationship, Profit &Loss, Speed etc.

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