

General study/General Hindi/Mining Engineering

Name of subject	No. of Questions	Maximum Marks	Time Period	Language
General Study	25	50	2 Hrs.	Hindi & English
General Hindi	25	50		
Mining Engineering	100	200		
Total	150	300		

(Each question will carry two Marks)

Main (written) Examination

1. Question Paper - Mining Engineering
2. Time Duration - 03 hrs
3. Total Marks - 200

Total Number of questions will be 8. Question paper will be divided in two parts - Section 'A' & Section 'B'. Question No. 1 will be compulsory & it will also be compulsory to attempt 2 questions for one each section. It is compulsory to attempt 5 questions. Each question will carry equal marks. Each question will be of 40 Marks.

APPENDIX-5**Syllabus for Preliminary/Main Examination****General Study (For Preliminary Examination)**

1. General Science (High School Standard)
2. History of India
3. Indian National Movement
4. Indian Polity, Economy & Culture
5. Indian Agriculture, Commerce & Trade
6. World Geography & Indian Geography & Natural resources of India.
7. Current National and International Important events.
8. Logic & Reasoning based on General Intelligence.
9. Specific knowledge regarding Education, Culture, Agriculture, Industry Trade, Living & Social Traditions of Uttar Pradesh
10. Elementary Mathematics up to 8th level:- Arithmetic, Algebra and Geometry.
11. Ecology and Environment.

General Hindi (For Preliminary Examination)

1. विलोम
2. वाक्य एवं वर्तनी-शुद्धि
3. अनेक शब्दों (वाक्यांश) के लिए एक शब्द
4. तत्सम एवं तद्भव शब्द
5. विशेष्य और विशेषण
6. पर्यायवाची शब्द
7. सन्धि एवं समास
8. उपसर्ग-प्रत्यय
9. मुहावरे एवं लोकोक्तियाँ

Mining Engineering (For Preliminary/Main Examination)

1. **Mining Geology and Economic Geology**
Physical Geology- Constitution of earth's interior, earthquake and volcano, weathering.
Mineralogy-Physical properties of minerals, identification of minerals, Mohs scale of hardness.
Petrology- Basics of igneous, sedimentary and metamorphic rocks.
Structural geology- Dip and strike, folds, faults, joints, joint sets.
Stratigraphy- Geologic time scale, classification of Indian rock formations, fossils and their uses.
Economic geology-Origin of coal, classification of Indian coals, Indian coal deposits, classification of ore deposits, Indian mineral wealth, mineral prospecting, sampling methods.
2. **Mine Surveying**
Principles of surveying.
Distance measurement techniques.
Chain surveying.
Computation of area and volume.
Underground surveying principles.
Levelling instrumentation and techniques.

Theodolite-principle, construction, surveying methods.

Superelevation

Curve fitting.

Correlation surveying.

3. Mining Technology

Modes of entry to surface and underground mines.

Shaft sinking- methods, shaft lining.

Drilling and blasting-Drilling techniques, cut holes, explosives, detonators, blasting practices, blasting accessories, misfire and its handling.

Methods of mining of coal and metalliferous deposits.

Roof support- Types and techniques, systematic support rules.

Mine lighting-Cap lamp, lamp room, electric lamps, mine lighting techniques.

4. Mine Transport and Machinery

Opencast and underground mines machineries-characteristic features and applicability.

Transportation systems in opencast and underground mines.

Mine pumps.

5. Rock mechanics and ground control

Physico-mechanical properties of rocks and their estimation.

Rockmass classification.

Mine subsidence parameters and their significance.

Ground control-Stowing methods.

Pit slope- parameters and stability.

6. Heat and Humidity

Sources of heat in underground mines.

Terminologies related to humidity.

Dry-bulb and wet-bulb temperatures (DBT and WBT).

Effect of heat and humidity. Effect of air velocity.

7. Surface Mine Environment

Mine noise-Terminology, effects of noise, sources of noise generation and control, noise standards.

Air pollution-Primary/secondary air pollutants, acid rain, global warming, green house effect, ozone layer depletion.

Water pollution-Classification of waste water, biochemical oxygen demand (BOD), chemical oxygen demand (COD).

Surface mine fires.

Basics of EIA and EMP.

8. Underground Mine Environment and Ventilation

Mine gases- Properties and detection, mine damp.

Flame safety lamps-Constructional features, safety features, application.

Underground mine fires- Causes, prevention & control, detection of spontaneous heating, incubation period.

Mine explosions-Causes and precautions against firedamp and coal dust explosions, Cowards diagram.

Natural ventilation-Causes, NVP.

Mechanical ventilation-Axial-flow/centrifugal fans, forcing/exhaust fans, auxiliary/booster fans.

Ventilation control devices, air-crossing, volumetric efficiency quotient (VEQ).

Splitting of air current.

Laws of airflow, air power, mine characteristic curve.

Standards of ventilation.

Ventilation survey-Instrumentation and procedure.

9. Mine Rescue and Recovery.

Mine rescue-Apparatus and operation. Rescue rules.

Mine recovery-Procedure.

10. Mine Legislation and Safety

Mine legislation-Mines Act, Mines Rules, Coal Mines Regulations, Workmen's Compensation Act.

Mine safety-Accidents in mines and their prevention. Occupational diseases.

Secretary