Problem Statement:

a. **Title:** ''Innovative Mineral Hunt Techniques" for mineral prognostication using state-of-art techniques practiced globally including emerging technologies like AI/ML.

b. **Objectives:**

    i. Demonstration of methodology and application of techniques, classical as well as emerging technologies, in finding exploration blocks using baseline (regional scale) geoscience data

    ii. Identification of new potential areas for exploration of gold, basemetal, phosphorite, manganese, graphite etc., within a pre-defined 14780 sq. km area in the state of Rajasthan, India.

    iii. Emphasis on locating deep seated/ concealed mineralized bodies with depth modelling

    iv. Deriving suitable ML codes for different mineral systems in the area and its validation with data not included in training set.

    v. Generation of predictive maps showing exploration targets visualized through maps, sections and 3D blocks.

c. **Deliverables:**

The solution has to be submitted online in a structured manner. There will be two components:

1. Outcome / Result as 2D / 3D visualization, and

2. Documentation with following sections

   o Name and details of Participant / Company etc

   o Resources used (Hardware, Software, Manpower etc)

   o Data used in details (List of Geological, Geophysical, Geochemical, Petrological, Drill, Remote Sensing, any other datasets)

   o List of derived data layer / extracted feature, if any, from primary data

   o Description and significance of those derivative layers or extracted features vis-à-vis mineral targeting

   o Methodology in details including data preparation / cleaning / transformation operations, statistical analysis, flow chart of steps etc.

   o AI/ML algorithms and other codes written by the contestant (s)

   o Supportive documents and information related to degree of confidence, relative contribution of input layers in the final output, etc.

All processed data sets (outcome / result) should be in the form of grid, tiff, jpeg, doc, xls etc. The dataset should be visualized in open source/ nonproprietary software. Only soft copy/ digital form will be accepted.