

This question paper contains 8+2 printed pages]

HPAS (Main)—2012

GEOLOGY

Paper II

Time : 3 Hours

Maximum Marks : 150

Note :— Attempt *Five* questions in all. Question No. 1 is compulsory. *All* questions carry equal marks. Give suitable sketches/illustrations wherever necessary.

कुल पाँच प्रश्नों के उत्तर दीजिए । प्रश्न क्रमांक 1 अनिवार्य है । सभी प्रश्नों के अंक समान हैं । जहाँ जरूरी हो वहाँ ठीक-ठीक चित्र दीजिए ।

1. Write notes on any *three* of the following :

(i) Enlist minerals of Moh's scale of hardness.

Amongst these explain main physical properties and write chemical composition of minerals having hardness of 4 and 5.

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- (ii) Symmetry and forms of normal class mineral of tetragonal crystal system.
- (iii) Common controlling factors for formation of residually and mechanically concentrated economic ore deposits.
- (iv) Petrological characters of any *one* of the rocks of granulite facies.
- (v) Peridotites, their types and their general petrological characters.

निम्न में से किन्हीं तीन पर टिप्पणियाँ लिखिये :

- (i) Moh's scale of hardness के minerals की सूची तैयार कीजिए । इनमें ऐसे minerals जिनकी hardness 4 एवं 5 है, की main physical properties और chemical composition का वर्णन कीजिये ।

- (ii) Tetragonal system की normal class mineral की Symmetry एवं Forms.
- (iii) Residually and mechanically concentrated economic ore deposits के बनने के common controlling factors.
- (iv) Granulite facies के किसी एक rock के Petrological characters.
- (v) Peridotites; इनकी किस्में एवं इनके general petrological characters.

2. Explain any *two* of the following :

- (i) Muscovite and Biotite : write optical and physical properties.
- (ii) Ilmenite and its associated economic mineral deposits of Kerala beach sands.

(iii) Albite-Anorthite plagioclase series. Explain their optical properties and also write chemical composition.

निम्न में से किन्हीं दो का वर्णन कीजिये :

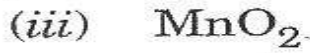
(i) Muscovite एवं Biotite : इनकी optical एवं physical properties लिखिये ।

(ii) Kerala beach sands की Ilmenite एवं इसकी associated economic mineral deposits.

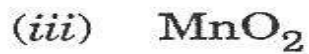
(iii) Albite-Anorthite plagioclase series. इनकी optical एवं chemical composition का भी वर्णन कीजिये ।

3. By indicating the inference of any *three* minerals explain their physical properties, mode of one of Indian occurrences and commercial uses whose chemical composition is shown as under :

(i) FeS_2



निम्न में से किन्हीं तीन minerals जिनकी chemical composition दी गई है, की physical properties mode of one of Indian occurrences and commercial uses का inference देते हुए वर्णन कीजिये :



4. Write explanatory notes on any *two* of the following :

- (i) Principles and methods of geophysical prospecting for radioactive ore deposits.
- (ii) Ore dressing method for magnetic ores.
- (iii) Mica deposits of Rajasthan.

निम्न में से किन्हीं दो पर व्याख्यात्मक टिप्पणी लिखिए :

- (i) Principles and methods of Geophysical methods for radioactive ore deposits.
- (ii) Ore dressing method for magnetic ores.
- (iii) Mica deposits of Rajasthan.

5. Describe any *two* of the following :

- (i) Geology, ore genetic process and nature of Rampura-Agucha lead-zinc deposits of Rajasthan.

- (ii) Banded Iron Formation (BIF) of Karnatka.
- (iii) Copper deposits of Malanjkhanda, Madhya Pradesh.

निम्न में से किन्हीं दो की व्याख्या कीजिए :

- (i) राजस्थान के Rampura-Agucha की लैड-जिंक डिपॉजिट्स की Geology, ore genetic एवं nature.
- (ii) कर्नाटक के Banded Iron Formation (BIF).
- (iii) Malanjkhanda एवं मध्य प्रदेश की कॉपर deposits.

6. Write petrological characters of any *two* of the following :

- (i) Nepheline syenite of Kishangarh, Rajasthan.
- (ii) Ladakh granites.
- (iii) Khondalite and its associated economic mineral deposits of Orissa.

निम्न में से किन्हीं दो के petrological characters लिखिये :

- (i) राजस्थान के किशनगढ़ का Nepheline syenite
- (ii) लद्दाख ग्रेनाइट्स
- (iii) उड़ीसा की खोंडालाइट एवं इसके associated आर्थिक खनिज डिपोजिट्स ।

7. Describe any *two* of the following :

- (i) Petrological characters and main mineralogy of any *two* of the rocks belonging to green schist facies.
- (ii) Two structures of clastic sedimentary rocks and add a note on their geological significance.
- (iii) Petrological characters of rocks of contact metamorphism of impure calcareous sediments.

निम्न में से किन्हीं दो की व्याख्या कीजिये :

- (i) किन्हीं दो green schist facies rocks के Petrological characters एवं मुख्य mineralogy का वर्णन कीजिये।
- (ii) क्लेस्टिक sedimentary रॉक्स की दो structures एवं उनकी geological significance की व्याख्या कीजिये।
- (iii) अशुद्ध calcareous सेडीमेन्ट के कॉन्टेक्ट मेटामॉर्फिज्म के rocks की पेट्रोलॉजिकल characters.

8. Explain any *two* of the following :

- (i) Optical properties of Quartz and Orthoclase.
- (ii) Hydraulic cement. Also add a note on specification of cement grade limestone.
- (iii) Petrological characters of volcanic rocks of Mandi, Himachal Pradesh.

निम्न में से किन्हीं दो का वर्णन कीजिये :

- (i) क्वार्ट्ज एवं ऑर्थोक्लेज के प्रकाशिक गुण ।
- (ii) हायड्रॉलिक सीमेन्ट । सीमेन्ट ग्रेड लाइमस्टोन के specification पर note भी लिखिये ।
- (iii) हिमाचल प्रदेश के मण्डी के volcanic रॉक्स के पेट्रोलॉजिकल गुण ।