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C.SCP-2010

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

T.B.C. : N-DTQ-K-IGN

TEST BOOKLET SERIES

Serial No 015629

TEST BOOKLET
GEOLOGY



Time Allowed : Two Hours

Maximum Marks : 300

INSTRUCTIONS

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4. This Test Booklet contains **120** items (questions). Each item is printed both in **Hindi and English**. Each item comprises four responses (answers). You will select the response which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each item.
5. You have to mark all your responses **ONLY** on the separate Answer Sheet provided. See directions in the Answer Sheet.
6. All items carry equal marks.
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10. **Penalty for wrong answers :**
THERE WILL BE PENALTY FOR WRONG ANSWERS MARKED BY A CANDIDATE IN THE OBJECTIVE TYPE QUESTION PAPERS.
 - (i) There are four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-third (0.33)** of the marks assigned to that question will be deducted as penalty.
 - (ii) If a candidate gives more than one answer, it will be treated as a **wrong answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
 - (iii) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

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ध्यान दें : अनुदेशों का हिन्दी रूपान्तर इस पुस्तिका के पिछले पृष्ठ पर छापा है ।

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DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

1. Consider the following :

1. Broad inter-stream upland.
2. Well integrated drainage.
3. Maximum relief.

Which of these characterize the maturity stage of the fluvial cycle of erosion ?

- (a) 1 only
- (b) 1 and 2
- (c) 2 and 3
- (d) 3 only

2. Which one of the following terraces is formed due to the effect of neotectonics ?

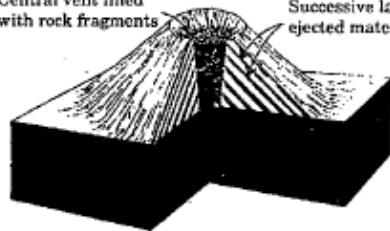
- (a) Paired terrace
- (b) Unpaired terrace
- (c) Kame terrace
- (d) Structured terrace

3. In a region where the total annual rainfall is very scanty and day-temperatures are very high, what type of landforms are likely to come across ?

- (a) Flat-topped
- (b) Rounded
- (c) Angular
- (d) Columnar

4.

Central vent filled with rock fragments
Successive layers of ejected material



Which one of the following types of volcanoes is shown in the above figure ?

- (a) Shield volcano
- (b) Strato volcano
- (c) Composite cone
- (d) Cinder cone

5. What is the age of the ocean floor ?

- (a) 0 - 200 m.y.
- (b) 0 - 500 m.y.
- (c) 0 - 1000 m.y.
- (d) 0 - 3500 m.y.

6. Which one of the following is associated with normal faulting ?

- (a) Closing of ocean basins
- (b) Formation of ocean basins
- (c) Overthrusting
- (d) Underthrusting

7. Consider the following statements :

1. Magnetic anomalies are parallel to the mid-oceanic ridges.
2. Magnetic anomalies are bilaterally symmetrical.
3. The age of magnetic anomalies increases away from the ridge.

Which of the above statements is/are correct ?

- (a) 1, 2 and 3
- (b) 1 and 2 only
- (c) 2 and 3 only
- (d) 3 only

8. What type of triple junction separates the Pacific plate, Nazca plate and Cocos plate ?

- (a) Ridge - Ridge - Ridge
- (b) Ridge - Transform fault - Ridge
- (c) Transform fault - Ridge - Transform fault
- (d) Trench - Ridge - Trench

9. Which one of the following methods of age determination is most suitable for dating the recent sediments of the deep-ocean floor ?

- (a) $^{235}\text{U} - ^{207}\text{Pb}$ method
- (b) $^{87}\text{Rb} - ^{87}\text{Sr}$ method
- (c) $^{40}\text{K} - ^{40}\text{Ca}$ method
- (d) ^{14}C method

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What type of triple junction separates the Pacific plate, Nazca plate and Cocos plate ?

(a) Ridge — Ridge — Ridge

(b) Ridge — Transform fault — Ridge

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(d) Trench — Ridge Trench

Which one of the following methods of age determination is most suitable for dating the recent sediments of the deep-ocean floor ?

1. निम्नलिखित पर विचार कीजिए :

1. विस्तृत अंतरासरित उच्चभूमि ।
2. सुसमाकलित अपवाह ।
3. अधिकतम उच्चावच ।

निम्नलिखित में से कौन सा/से अपरदन के नदीय चक्र की प्रौढ़ावस्था की विशेषता को बताता है/बताते हैं ?

- (a) केवल 1
- (b) 1 और 2
- (c) 2 और 3
- (d) केवल 3

2. निम्नलिखित वेदिकाओं में से कौन सी एक वेदिका नवविद्वत्तनिक के प्रभाव के परिणामस्वरूप निर्मित होती है ?

- (a) युग्मित वेदिका
- (b) अयुग्मित वेदिका
- (c) केम वेदिका
- (d) संरचित वेदिका

3. ऐसे क्षेत्र में, जहाँ सम्पूर्ण वार्षिक वर्षा बहुत कम हो और दिन के तापमान बहुत अधिक हों, तो किस प्रकार की भू-आकृतियाँ दिखना सम्भावित हैं ?

- (a) सपाट-शीर्ष
- (b) गोलीय
- (c) कोणीय
- (d) स्तंभी

4. शैल खंडों से भरा केंद्रीय मुख बहिःक्षिप्त पदार्थ की उत्तरोत्तर परतें



उपर्युक्त चित्र में, निम्नलिखित में से कौन सा एक ज्वालामुखी प्रकार दर्शाया गया है ?

- (a) गुंबदी (शील्ड) ज्वालामुखी
- (b) स्तरित ज्वालामुखी
- (c) मिश्र शंकु
- (d) सिंहर शंकु

5. महासागर सतह की आयु क्या है ?

- (a) 0 – 200 m.y.
- (b) 0 – 500 m.y.
- (c) 0 – 1000 m.y.
- (d) 0 – 3500 m.y.

6. निम्नलिखित में से कौन सा एक, सामान्य भ्रंश से सम्बन्धित है ?

- (a) महासागर द्रोणियों का बन्द होना
- (b) महासागर द्रोणियों का निर्माण
- (c) अधिक्षेपण
- (d) अधक्षेपण

7. निम्नलिखित कथनों पर विचार कीजिए :

1. चुंबकीय विसंगतियाँ, मध्य-महासागरी कटक के समान्तर होती हैं ।
2. चुंबकीय विसंगतियाँ, द्विपार्श्व-सममिति में होती हैं ।
3. चुंबकीय विसंगतियों की आयु कटक से दूर जाने पर बढ़ती है ।

उपर्युक्त कथनों में से कौन सा/से सही है/हैं ?

- (a) 1, 2 और 3
- (b) केवल 1 और 2
- (c) केवल 2 और 3
- (d) केवल 3

8. पैसिफिक प्लेट, नाज़का प्लेट और कौकॉस प्लेट को कौन से प्रकार की त्रिसंधि अलग करती है ?

- (a) कटक – कटक – कटक
- (b) कटक – रूपांतर भ्रंश – कटक
- (c) रूपांतर भ्रंश – कटक – रूपांतर भ्रंश
- (d) खाई – कटक – खाई

9. गभीर-महासागर सतह के अभिनव अवसादों के कालनिर्धारण के लिए, आयु निर्धारण की निम्नलिखित विधियों में से कौन सी एक सबसे उपयुक्त है ?

- (a) $^{235}\text{U} - ^{207}\text{Pb}$ विधि
- (b) $^{87}\text{Rb} - ^{87}\text{Sr}$ विधि
- (c) $^{40}\text{K} - ^{40}\text{Ca}$ विधि
- (d) ^{14}C विधि

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(a) 0 - 200 m.y.

(b) 0 — 500 my.

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(d) 0 - .3500 ln.y.

10. In a rocky desert the usual sequence of occurrence of landforms from mountain front to the interior basin with an evaporation pan is
- pediment, playa, bajada and scarp
 - scarp, bajada, playa and pediment
 - pediment, scarp, bajada and playa
 - scarp, pediment, bajada and playa
11. Due to which one of the causes given below, is the scale of an aerial photograph *not* uniform?
- Topography of an area is never even
 - Variation of velocity of the aircraft
 - Vibration of the camera
 - Effect of crosswind which deflects the aircraft from actual flight direction
12. What is the characteristic primary ore mineral occurring in Rakha mines of Jharkhand?
- Galena
 - Sphalerite
 - Malachite
 - Chalcopyrite
13. Which one of the following is a common topographic representation of a fault scarp?
- Closed contours
 - V-shaped contours
 - Widely spaced contours
 - Closely spaced contours
14. Which one of the following is the odd-one-out?
- Spit and bar
 - Esker
 - Kame
 - Cirque
15. Which term describes the flat-topped sea mounts?
- Fumaroles
 - Sea core
 - Guyots
 - Mesa
16. Which one of the following planets has only one satellite?
- Mercury
 - Earth
 - Neptune
 - Saturn
17. What is the colour of healthy vegetation in a false colour infrared positive print?
- Light green
 - Dark green
 - Blue
 - Red
18. Consider the following statements :
During aerial photography, the images of objects can get displaced on the photographs.
- Tilt of the camera axis.
 - Flying height.
 - Relief of the object.
- Which of these causes displacements?
- 1 only
 - 2 only
 - 1 and 3
 - 2 and 3
19. Orthogonal thickness is minimum in the hinge in
- Supratenuous fold
 - Ptygmatic fold
 - Overtured fold
 - Similar fold
20. What is the strike of a coal seam if its apparent dip along both N 180° and N 270° is 30°?
- S 45° W
 - S 40° E
 - N 45° E
 - N 45° W

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- (b) scarp, bajada, playa and pediment
- (c) pediment, scarp, bajada and playa
- (d) scarp, pediment, bajada and playa

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(d) Similar fold

What is the strike of a coal seam if its apparent dip along both N 180° and N 270° is 30°

10. शैलमय मरुस्थल में, पर्वताग्र से वाष्पन पात्र वाले आन्तरिक द्रोणी तक भू-आकृतियों के निर्माण का सामान्य अनुक्रम क्या है ?
 (a) पेडिमेंट, प्लाय, बाहादा और कगार
 (b) कगार, बाहादा, प्लाय और पेडिमेंट
 (c) पेडिमेंट, कगार, बाहादा और प्लाय
 (d) कगार, पेडिमेंट, बाहादा और प्लाय
11. नीचे दिए हुए कारणों में से किस एक के फलस्वरूप, वायव फोटो का स्केल एकसमान नहीं होता है ?
 (a) क्षेत्र की स्थलाकृति कभी समतल नहीं होती है
 (b) वायुयान के वेग में परिवर्तन
 (c) कैमरा का कंपन
 (d) वायुयान की वास्तविक उड़ान दिशा को विक्षेपित करने वाला, तिर्यक पवन का प्रभाव
12. झारखण्ड के राखा खानों में मिलने वाला अभिलाक्षणिक प्राथमिक अयस्क खनिज क्या है ?
 (a) गैलेना
 (b) स्फैलेराइट
 (c) मैलेकाइट
 (d) कैल्कोपाइराइट
13. निम्नलिखित में से कौन सा एक, भ्रंश-कगार का सामान्य स्थलाकृतिक निरूपण है ?
 (a) संवृत समोच्च रेखाएँ
 (b) V-आकृतिक समोच्च रेखाएँ
 (c) दीर्घान्तराली समोच्च रेखाएँ
 (d) अल्प-अन्तराली समोच्च रेखाएँ
14. निम्नलिखित में से कौन सा एक, अन्य सभी से भिन्न है ?
 (a) स्पिट एवं बार
 (b) एस्कर
 (c) कैम
 (d) सर्क
15. कौन सा पद, सपाट-शीर्ष समुद्री टीलों को वर्णित करता है ?
 (a) वाष्पमुख
 (b) समुद्री क्रोड
 (c) गार्डऑट
 (d) मेसा
16. निम्नलिखित में से किस एक ग्रह का केवल एक उपग्रह है ?
 (a) बुध
 (b) पृथ्वी
 (c) नेपच्यून
 (d) शनि
17. आभासी वर्ण अवरक्त पोजिटिव छाप में स्वस्थ वनस्पति का रंग क्या है ?
 (a) हलका हरा
 (b) गहरा हरा
 (c) नीला
 (d) लाल
18. निम्नलिखित कथनों पर विचार कीजिए :
 वायव फोटोग्राफी के दौरान, फोटो पर वस्तुओं का प्रतिबिम्ब विस्थापित हो सकता है ।
 1. कैमरा अक्ष का झुकाव ।
 2. उड़ान ऊँचाई ।
 3. वस्तु का उच्चावच ।
 इसमें से किस/किन के कारण विस्थापन होता है ?
 (a) केवल 1
 (b) केवल 2
 (c) 1 और 3
 (d) 2 और 3
19. हिज में लाबिक मोटाई किसमें निम्नतम होती है ?
 (a) अतितनु बलन
 (b) सर्पगतिक बलन
 (c) प्रतिबलित बलन
 (d) समरूप बलन
20. एक कोयला-संस्तर का नतिलम्ब क्या है यदि इसकी आभासी नति, N 180° एवं N 270° दोनों के अनुदिश, 30° है ?
 (a) S 45° W
 (b) S 40° E
 (c) N 45° E
 (d) N 45° W

13.

14.

15.

16.

18.

19.

(d) Fna

21. What is the type of unconformity when the younger sedimentary rocks overlie unconformably the igneous rocks ?

- (a) Disconformity
- (b) Non-conformity
- (c) Angular unconformity
- (d) Out lap

22. Which one of the following folds will have a curved hinge line ?

- (a) Upright-non plunging fold
- (b) Plunging cylindrical fold
- (c) Non-cylindrical fold
- (d) Vertical cylindrical fold

23. Consider the following folds :

- 1. Close
- 2. Open
- 3. Gentle
- 4. Tight

What is the correct order of increasing inter limb angle in these folds ?

- (a) 4, 1, 2 and 3
- (b) 3, 1, 2 and 4
- (c) 4, 2, 1 and 3
- (d) 3, 2, 1 and 4

24. Which one of the following folds has horizontal axis ?

- (a) Recumbent fold
- (b) Overthrust fold
- (c) Chevron fold
- (d) Fan fold

25. Match List I with List II and select the correct answer using the code given below the lists :

<u>List I</u>	<u>List II</u>
A. Axial surface	1. Horizontal axial plane
B. Recumbent fold	2. Both the limbs are overturned
G. Chevron fold	3. Contains all the hinges
D. Fan fold	4. Hinges are sharp and angular

Code :

	A	B	C	D
(a)	3	1	4	2
(b)	2	1	4	3
(c)	3	4	1	2
(d)	2	4	1	3

26. Consider the following statements :

- 1. Those in which the footwall moved up, while the hanging wall remained stationary.
- 2. Those in which the hanging wall moved down and the footwall moved up.
- 3. Those in which both blocks moved down, but in which the footwall moved a greater amount.
- 4. Those in which both blocks moved up, but in which the hanging wall moved less than the footwall.

Which of the above statements is/are correct for normal fault ?

- (a) 1 only
- (b) 2 and 3 only
- (c) 1, 2 and 3
- (d) 1, 2 and 4

younger sedimentary ' rocks overlie unconformably the igneous rocks ?

- (a) Disconformity
- (b) Non-conformity I
- (c)' Angular unconformity
- (d) Out lap

22. Which one of the following folds will have a curved hinge' line'?

- (a) Upright-non plunging fold
- (b) Plunging cylindrical fold

- (c) Non-cylindrical fold
- (d) Vertical cylindrical fold

23. Consider the following folds :

1. Close
2. Open
26. 3. Gentle
4. Tight

What is the correct order of increasing inter limb angle in these folds ?

- (a) 4, 1, 2 and 3
- (b) 3, 1, 2 and (c) 4, 2, 1 and 3'
- (<1) 3, 2, 1 and 4

24.- Which one' of the following folds has

- horizontal axis

- (21) , Recumbent fold
- (b) Overthrust fold
- (C) Chevron fold
- (d) Fan fold

N-DTC1-K-IGN I: 5 - A 1

Match List I with List II and select the correct answer using the code given below
“the lists :

List I List II

A. Axial surface 1. Horizontal
axial plane

B. Recumbent fold 2. Both the limbs

- are overturned

G. Chevron fold 3. Contains all

the hinges

D. Fan fold 4. Hinges are

sharp and angular

Code :

A B 0 . 1)

ta) 3 1 4 2

(b) 2 1 a

(C) 3 4 1 2

(d) 2 4 1 2.

Consider the following statements :

1. Those in which the footwall moved-up, while 2 the hanging wall remained stationary.

2. Those in which the hanging wall moved

down and the footwall moved up.

3. Those in which both blocks moved down, but in which the footwall moved greater amount.

4. 'Those in which both moved up, but in which the hanging wall moved less than the footwall.

Which of the above statements is/are correct for normal fault;

(a) 1 only

(b). 2 and 3' only

(c) 1, 2 and 3

(d) 1, 2 and 4

21. जब तरुण अवसादी शैलें, विषमविन्यस्त रूप से आग्नेय शैलों के ऊपर हों तब यह विषमविन्यास का कौन सा प्रकार है ?

- (a) अपसमविन्यास
- (b) असमविन्यास
- (c) कोणीय विषमविन्यास
- (d) आउट लैप

22. निम्नलिखित में से किस वलन की वक्रित हिन्ज रेखा होगी ?

- (a) उर्ध्वाधर-अवनमनी वलन
- (b) अवनमनी बेलनाकार वलन
- (c) अबेलनाकार वलन
- (d) उर्ध्वाधर बेलनाकार वलन

23. निम्नलिखित वलनों पर विचार कीजिए :

1. संकृत (क्लोज़)
2. विवृत
3. मंद
4. संकुष्ट (टाइट)

इन वलनों में बढ़ते हुए अन्तरापाद कोण का सही क्रम क्या है ?

- (a) 4, 1, 2 और 3
- (b) 3, 1, 2 और 4
- (c) 4, 2, 1 और 3
- (d) 3, 2, 1 और 4

24. निम्नलिखित में से किस एक वलन का क्षैतिज अक्ष है ?

- (a) शयान वलन
- (b) अधिक्षेप वलन
- (c) कोणीय वलन
- (d) पंखा वलन

25. सूची I को सूची II से सुमेलित कीजिए और सूचियों के नीचे दिए गए कूट का प्रयोग कर सही उत्तर चुनिए :

सूची I

सूची II

- | | |
|---------------|-------------------------------|
| A. अक्षीय सतह | 1. क्षैतिज अक्षीय तल |
| B. शयान वलन | 2. दोनों पाद प्रतिवर्तित हैं |
| C. कोणीय वलन | 3. सभी हिन्ज समाविष्ट हैं |
| D. पंखा वलन | 4. हिन्ज तीक्ष्ण और कोणीय हैं |

कूट :

	A	B	C	D
(a)	3	1	4	2
(b)	2	1	4	3
(c)	3	4	1	2
(d)	2	4	1	3

26. निम्नलिखित कथनों पर विचार कीजिए :

1. वे जिनमें आधार भित्ति ऊपर गई हो, जबकि ऊपरी भित्ति स्थिर रही हो।
2. वे जिनमें ऊपरी भित्ति नीचे गई हो और आधार भित्ति ऊपर गई हो।
3. वे जिनमें दोनों खण्ड नीचे गए हों लेकिन आधार भित्ति बृहत्तर परिमाण में गई हो।
4. वे जिनमें दोनों खण्ड ऊपर गए हों लेकिन ऊपरी भित्ति, आधार भित्ति से अपेक्षाकृत कम गई हो।

उपर्युक्त कथनों में से कौन सा/से सामान्य भ्रंश के लिए सही है/हैं ?

- (a) केवल 1
- (b) केवल 2 और 3
- (c) 1, 2 और 3
- (d) 1, 2 और 4

22.

23.

24.

'(c)

25.

27. In a cylindrical fold the
 (a) hinge line is straight.
 (b) hinge line is curved.
 (c) axial plane is vertical.
 (d) limbs are inclined at the same angle.
28. Under the polarizing microscope a mineral grain between the cross-nicols appears dark at all positions of the stage. The mineral will be isotropic if the grain
 (a) remains dark under conoscopic observations.
 (b) remains dark in plane polarized light.
 (c) shows isogyres under conoscopic observation.
 (d) shows small specks of light with the aperture closed.
29. In an outcrop on more or less flat topography congruous sinistral minor folds are observed on bedding that dips steeply towards west, while the axial planar cleavage dips northwesterly at a gentler angle. What is the major fold closure that is likely to be encountered on tracing the outcrops towards south?
 (a) Northerly plunging synform
 (b) Southerly plunging synform
 (c) Upright antiform
 (d) Southerly plunging antiform
30. Which of the following represents strike line on the stereographic projection/net?
 (a) Line passing through center
 (b) Point on the circumference
 (c) Small circle
 (d) Great circle
31. In tetragonal crystals, the two horizontal axes are equal and at 90° to each other. A normal to the face with Miller Indices (221) makes an angle of 45° with the b-axis. This value is known as its ϕ value. What will be the ϕ value of (111) face?
 (a) 30°
 (b) 45°
 (c) 60°
 (d) 90°
32. Which one of the following combinations characterizes cubic system (Galena type)?
 (a) 9 planes, 13 axes, a centre
 (b) 13 planes, 9 axes, a centre
 (c) 3 planes, 7 axes, a centre
 (d) 6 planes, 7 axes, no centre
33. Consider the following statements:
 1. They belong to the same crystal class as the Holohedral forms.
 2. They have the same indices as the Holohedral form.
 3. They have half the number of faces as the Holohedral form.
 4. For each Holohedral form there are two corresponding forms.
 Which of the above statements is/are correct?
 (a) 1 only
 (b) 2 and 3 only
 (c) 2, 3 and 4
 (d) 3 and 4 only
34. Which one of the following minerals crystallizes in a different crystal system than rest of the three?
 (a) Diopside
 (b) Augite
 (c) Aegirine
 (d) Enstatite
35. Which one of the following formations is known for the occurrence of glacial deposits?
 (a) Barakar formation
 (b) Raniganj formation
 (c) Talchir formation
 (d) Panchet formation
36. Which one of the following represents the correct condition to examine interference colours of rock-forming silicates?
 (a) Reflected light using one nicol
 (b) Reflected light using both the nicols
 (c) Transmitted light using one nicol
 (d) Transmitted light using both the nicols

In a cylindrical fold the

(a) hinge line is straight.

(b) 'hinge line is curved.

(c) axial plane is vertical.

(d) limbs are inclined at the same angle.

28. Under the polarizing microscope a mineral grain between the cross-nicols appears dark at all positions of the stage. The mineral will be isotropic if the grain

_ (a) remains - dark under conoscopic observations.

(b) remains dark in plane polarized light. (c) shows isogyres under conoscopic observation.

(d) shows small specks of light with the aperture closed.

29. In an outcrop on more or less flat topography congruous sinistral minor folds are observed on bedding that dips steeply towards west, While the axial planar cleavage dips northwesterly at a gentler angle. What is the major fold closure that is likely to be encountered on tracing the outcrops towards south

(a) Northerly plunging synform (b) Southerly plunging synform (c) Upright antiform (d) Southerly plunging antiform

30. Which of the following represents strike line

on the stereographic projection./net ? (a) Line passing through center (b) Point on the circumference

(c) Small circle (d) Great circle

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(a) 30°

(b) 45°

(c) 60°

(d) 90°

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32.

33.

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35.

36.

Which one of the following combinations characterizes cubic system (Galena type) ?

(a)

(b)

(c) 3 planes, 7 axes, a centre

9 planes, 13 axes, a centre

13 planes, 9 axes, a centre

(d) 6 planes, 7 axes, no centre

Consider the following statements :

1. They belong to the same crystal class as the Holohedral forms.

2. They have the same indices as the Holohedral form.

3. They have half the number of faces as the Holohedral form.

4. For each Holohedral form there are two corresponding forms. '

Which of the above statements is/are correct ?

(a) 1 only

(b) 2 and 3 only

(c) 2, 3 and 4

(d) 3 and 4 only

Which one of the following minerals crystallizes in a different crystal system than rest of the three

(a) Diopside

(b) Augite (0) Aegirine

(d) Enstatite

Which one of the following formations is known for the occurrence of glacial deposits

(a)

Barakar formation

(b) Raniganj formation

(c) Talchir formation

(cl) Panchet formation

Which one of the following represents the correct condition to examine interference colours of rock-forming silicates

- (a) Reflected light using one nicol
- (b) Reflected light using both the nicols
- (c) Transmitted light using one nicol
- (d)_ Transmitted light using both the nicols

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27. बेलनाकार बलन में
(a) हिज रेखा सीधी होती है।
(b) हिज रेखा वक्रित होती है।
(c) अक्षीय तल ऊर्ध्वाधर होता है।
(d) पाद समान कोण पर झुके होते हैं।
28. ध्रुवण सूक्ष्मदर्शी में एक खनिज कण क्रॉस-निकल के बीच स्टेज की सभी स्थितियों में काला प्रतीत होता है। खनिज समदैशिक होगा यदि कण
(a) अभिध्रुवणदर्शी प्रेक्षणों में काला बना रहता है।
(b) समतल-ध्रुवित प्रकाश में काला बना रहता है।
(c) अभिध्रुवणदर्शी प्रेक्षण में आइसोगायर प्रदर्शित करता है।
(d) बन्द द्वारक (ऐपचर) के साथ प्रकाश के छोटे धब्बे प्रदर्शित करता है।
29. न्यूनाधिक सपाट स्थलाकृति वाले दृश्यांश में, सुसंगत वामावर्त गौण बलन, पश्चिम की ओर तीक्ष्ण नति वाले संस्तर पर अवलोकित है, जबकि अक्षीय तल विदलन की नति, अपेक्षाकृत मंद कोण पर उत्तर-पश्चिम की ओर है। दृश्यांश को दक्षिण की ओर अनुरेखण करने पर सम्भवतः प्राप्त बृहद् बलन संवरक क्या है ?
(a) उत्तराभिमुख अवनमनी अभिनतरूप
(b) दक्षिणाभिमुख अवनमनी अभिनतरूप
(c) ऊर्ध्वाधर अपनतरूप
(d) दक्षिणाभिमुख अवनमनी अपनतरूप
30. निम्नलिखित में से किससे त्रिविम प्रक्षेप/नेट पर नतिलम्ब रेखा निरूपित होती है ?
(a) केन्द्र से होकर गुजरने वाली रेखा से
(b) परिधि पर बिन्दुओं से
(c) लघु वृत्त से
(d) बृहत् वृत्त से
31. द्विसमलंबाक्ष क्रिस्टलों में, दोनों धैतिज अक्ष बराबर हैं और एक-दूसरे से 90° पर हैं। मिलर सूचकांक (221) वाले फलक पर लम्ब, b-अक्ष से 45° का कोण बनाता है। यह मान इसका ϕ मान कहलाता है। फलक (111) का ϕ मान क्या होगा ?
(a) 30°
(b) 45°
(c) 60°
(d) 90°
32. निम्नलिखित में से कौन सा एक संयोजन, धनीय समुदाय (गैलेना प्रकार) का अभिलक्षण है ?
(a) 9 तल, 13 अक्ष, एक केन्द्र
(b) 13 तल, 9 अक्ष, एक केन्द्र
(c) 3 तल, 7 अक्ष, एक केन्द्र
(d) 6 तल, 7 अक्ष, बिना केन्द्र का
33. निम्नलिखित कथनों पर विचार कीजिए :
1. वे उसी क्रिस्टल-वर्ग से सम्बन्धित हैं जिससे पूर्णफलकीय रूप।
2. उनके सूचकांक पूर्णफलकीय रूप के सूचकांक के समान हैं।
3. इनके फलकों की संख्या पूर्णफलकीय रूप के फलकों की संख्या से आधी है।
4. प्रत्येक पूर्णफलकीय रूप के लिए दो सदृश रूप हैं।
उपर्युक्त कथनों में से कौन सा/से सही है/हैं ?
(a) केवल 1
(b) केवल 2 और 3
(c) 2, 3 और 4
(d) केवल 3 और 4
34. निम्नलिखित में से कौन सा एक खनिज, बाकी तीन खनिजों से भिन्न क्रिस्टल समुदाय में क्रिस्टलित होता है ?
(a) डाइऑप्साइड
(b) औजाइट
(c) इंजिरिन
(d) एन्स्टाटाइट
35. निम्नलिखित में से कौन सा एक शैलसमूह, हिमनदीय निक्षेप की उपस्थिति के लिए जाना जाता है ?
(a) बाराकर शैलसमूह
(b) रानीगंज शैलसमूह
(c) तालचीर शैलसमूह
(d) पैंचेत शैलसमूह
36. निम्नलिखित में से कौन सा एक, शैलकारी सिलिकेटों के व्यतिकरण-वर्णों के परीक्षण के लिए सही दशा को निरूपित करता है ?
(a) परावर्तित प्रकाश, एक निकल का प्रयोग कर
(b) परावर्तित प्रकाश, दोनों निकल का प्रयोग कर
(c) पारगत प्रकाश, एक निकल का प्रयोग कर
(d) पारगत प्रकाश, दोनों निकल का प्रयोग कर

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37. What is the characteristic extinction of garnet under the microscope ?
- 0° extinction angle
 - 15° extinction angle
 - 30° extinction angle
 - Isotropic
38. Which one of the following names would you suggest for a pyroxene whose $C \wedge Z$ as measured on (010) is 54° ?
- Enstatite
 - Hypersthene
 - Diopside
 - Augite
39. Which of the following instruments can best be used to measure the order of interference colour ?
- Bertrand ocular
 - Mica plate
 - Gypsum plate
 - Quartz wedge
40. Consider the following statements :
- The uniaxial interference figure serves to determine the crystal system of any mineral.
 - The uniaxial interference figure serves to determine the location of the optic axis.
 - The uniaxial interference figure serves to determine the optic sign.
 - The uniaxial interference figure serves to determine the birefringence.
- Which of the above statements are correct ?
- 2, 3 and 4
 - 1, 2 and 3
 - 1, 2 and 4
 - 1, 3 and 4
41. Which one of the following information is required to evaluate the birefringence of a mineral grain present in a thin section with the help of Michael Levy's chart ?
- Thickness of the section in millimeters and the optical orientation of the grain
 - Thickness of the section in millimeters and the mean refractive index of the mineral
 - Path difference shown by the mineral in millimicrons and the mean refractive index of the mineral
 - Path difference shown by the mineral in millimicrons and thickness of the section in millimeters
42. Which one of the following minerals is biaxial positive ?
- Enstatite
 - Tremolite
 - Orthoclase
 - Anorthite
43. Match List I with List II and select the correct answer using the code given below the lists :
- | <i>List I</i>
(Mineral) | <i>List II</i>
(Crystal System) |
|----------------------------|------------------------------------|
| A. Hornblende | 1. Trigonal |
| B. Tourmaline | 2. Isometric |
| C. Hypersthene | 3. Monoclinic |
| D. Pyrope | 4. Triclinic |
| | 5. Orthorhombic |
- Code :
- | | A | B | C | D |
|-----|---|---|---|---|
| (a) | 3 | 1 | 4 | 5 |
| (b) | 2 | 1 | 4 | 3 |
| (c) | 3 | 1 | 5 | 2 |
| (d) | 2 | 4 | 1 | 5 |

under the microscope ?

- (a) 0° extinction angle
- (b) 15° extinction angle
- (c) 30° extinction angle
- (d) Isotropic

38. Which one of the following names would you suggest for a pyroxene whose $C \wedge Z$ as measured on (010) is 54°

- (a) Enstatite
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39. Which of the following instruments can best be used to measure the order of interference colour ?

- (a) Bertrand ocular
- (b) Mica plate
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40. Consider the following statements :

- _ 1. The uniaxial interference figure serves to determine the crystal system of any mineral. I
- 2. The uniaxial interference figure serves to determine the location of the optic axis.
- 3. The uniaxial interference figure serves to determine the optic sign.
- 4. The uniaxial interference figure serves to determine the birefringence.

Which of the above statements are correct ?

- (a) 2, 3 and 4
- (b) 1, 2 and 3
- (c) 1, 2 and 4
- (:1) 1, 3 and 4

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41.

Which one of the following information is required to evaluate the birefringence of a mineral grain present in a thin section with the help of Michael Levy's chart ?

- (a) Thickness of the section in millimeters and the optical orientation of the grain
- (b) Thickness of the section in millimeters and the mean refractive index of the mineral '
- (c) Path difference shown by the mineral in millimicrons and the mean refractive index of the mineral .

(d) Path difference shown by the mineral in millimicrons and thickness of the section -in millimeters

Which one of the following minerals is biaxial positive ?

- (a) Enstatite
- (b) Tremolite
- (c) Orthoclase
- (d) Anorthite

Match List I with List II and select the correct answer using the code given below the lists :

List I List II (Mineral) (Crystal

System)

A. Hornblende 1. Trigonal

B. Tourmaline ' 2. Isometric

C. Hypersthene 3. Monoclinic

D. Pyrope 4. Triclinic

5. Orthorhombic

Q15

A B C D

(a) 3 1 . 4 5

(b) 2 1 4 3

(C) 3 1 5 2

(<1) 2 4 1 5