Government of Karnataka
Karnataka School Examination and Assessment Board
II PUC Exam - 1 MARCH - 2025

Subject: 37- Geology **Scheme of Evaluation** **Max. Marks: 80**

PART – A

I. Answer all the following questions **(5 X 1 = 5)**

1. During rock cycle, how can sedimentary rock become metamorphic rock?

(a) By pressure and temperature----------1 mark

2) Choose the hypabyssal rock among the following:

(b) Dolerite----------1 mark

3) • The rock consists of finest particles.
• Average grain size is less than 0.01 mm.
Based on the above information, identify the rock.

(c) Shale----------1 mark

4) The rock which is formed by dynamothermal metamorphism is

(a) Schist ----------1 mark

5) Which of the following is the youngest era?

(d) Cenozoic----------1 mark

II. Fill in the blanks: **(5x1=5)**

(Dip, Sills, Transport-direction, Brunton compass, Fossils, Strike)

6) Sills are thin, tabular concordant bodies. ----------1 mark

7) Cross-bedding and ripple structures help us to know the Transport-direction of sediments. -1 mark

8) Dip is defined as the angle of inclination with horizontal bed. ----------1 mark

9) Brunton compass is used to measure attitude of beds. ----------1 mark

10) Fossils are the remains or traces of organisms of geologic past. ----------1 mark

III. 11) Match the following: **(5×1=5)**

A	B
(a) Primary rock	iii. Granite----------1 mark
(b) Pegmatite	iv. Gemstone----------1 mark
(c) Limb	i. Fold----------1 mark
(d) Himalayan mountain	ii. Cenozoic era----------1 mark
(e) Glossopteris.	vi. Lower Gondwana----------1 mark

IV. Answer all the following questions: **(5x1=5)**

12) What are secondary rocks?

Ans) Sedimentary rocks or Define----------1 mark

13) What is the composition of shale?

Ans) Clay minerals ----------1 mark

14) Give any two examples for metamorphic rocks.

Ans) Schists, granulite, eclogite, slate, marble, quartzite, gneiss, charnockite (any two) -------1 mark

15) Define axis of a fold.

Ans) line of intersection of axial plane with bedding plane----------1 mark

16) What is corallum?

Ans) Entire body of coral/calceola----------1 mark

PART - B

V. Answer any seven of the following questions: **(7×2=14)**

17) Define Texture.

Ans) • small scale features observed in microscope.

• shows mutual relation between mineral and glassy matter----------2 marks

18) What is Pahoehoe structure?

Ans) •Also called as ropy lava

• low viscosity and basic composition

• Appears like rope

• Igneous rock structure. (Any two points) ----------2 marks

19) Write the uses of igneous rocks.

Ans) • Economically important

• Building material.

• Road construction.

• Decorative purposes. ----------2 marks

20) How are sedimentary rocks formed?

Ans) Weathering, Transportation, Deposition, Lithification, Diagenesis----------2 marks

21) Define the roundness in sedimentary rocks.

Ans) • Degree of angularity of grain.

• Rounding of edges of clast. ----------2 marks

22) Define Hypozone. Give an example.

Ans) • it is zone of metamorphism

• Temperature (550°C-1200°c), great depth

• Hydrostatic stress.

• Plutonic metamorphism----------1 mark

E.g. granulite, eclogite----------1 mark

23) What is Charnockite? Mention its texture.

Ans) • Charnockite is metamorphic rock----------1 mark

• Granoblastic texture----------1 mark

24) Define Outlier.

Ans) • Younger rock surrounded by older rock

• Erosion of older overlying rocks. ----------2 marks

25) Occurrence and distribution of Archaean rocks. Explain.

Ans) • Two third of peninsula

• Best developed in South India

• Rajasthan, Madhya Pradesh, Eastern parts of India

• Extra peninsular India along Himalayas. ----------2 marks

26) Define track and trails.

Ans) • Formed over soft mud and sandy bottom.

• impressions of movement.

• Pseudo fossil----------2 marks

27) What is mummification? Give an example.

Ans) • entire body is preserved in cold region. ----------1 mark

E.g.: woolly mammoth----------1 mark

28) Define Carbonization.

Ans) • Material of plant / animal becomes Carbonized

• Undergo decomposition, loosing oxygen and nitrogen with increase in carbon---------2 marks

VI. Answer any seven of the following questions: (7 x 3 = 21)

29) Explain volcanic igneous rocks. Give an example.

Ans) Explanation----------2 marks

- Rocks formed on the surface
- Rapid cooling.
- Eruptive condition.
- fine grained or glassy nature.

E.g.: Rhyolite, Dacite, Trachyte, Andesite, Phonolite, Basalt, Pumice----------1 mark

30) Explain aphanitic grain size of igneous rocks.

Ans) Explanation----------3 marks

- Refers to grains size of crystal.
- grains cannot be identified by eyes.
- microcrystalline - observed under microscope.
- cryptocrystalline- not observed under microscope.
- glassy- no traces of crystal

31) Explain dynamothermal metamorphism. Give an example.

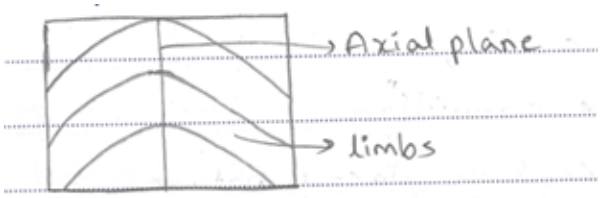
Ans) Explanation----------2 marks

- Type of metamorphism.
- Combined action of pressure, temperature and fluids
- Large scale changes in structures and chemical constituent of pre-existing rock

E.g.: Himalayas. ----------1 mark

32) With a neat labelled diagram, explain symmetrical fold.

Ans) Diagram----------1 mark

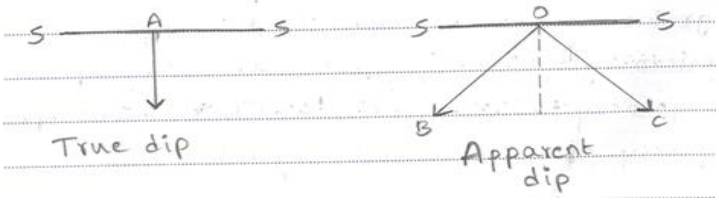


Explanation----------2 marks

- Axial plane is vertical.
- bisect fold equally.
- Same dip on either side.

33) With a neat labelled diagram, explain the types of dips.

Ans) Diagram----------1 mark



Explanation----------2 marks

- True dip - Perpendicular to strike
- Apparent dip - other than true dip

34) Write a note on the importance of geologic structures.

Ans) Explanation----------3 marks

- Economic, Petroleum, mining, environmental geology.
- Natural disaster, dam, road cut, tunnel.
- Potential groundwater.
- Seepage, sewage.

35) List the non-metallic deposits of Archaeans.

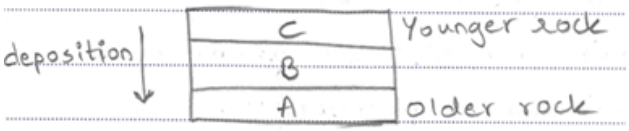
Ans) Explanation----------3 marks

- Mica - Bihar
- Kyanite - Singhbhum
- Sillimanite - Assam, Rajasthan
- Magnesite - Selam, Mysore
- Marble, Granite, Basalt, Slate

36) Explain the law of order of superposition.

Ans) Explanation----------3 marks

- Undisturbed sequence
- Bottom sequence is older
- Overlying sequence is younger.
- Beds deposit horizontally.
- Establishing natural sequence



37) Write a note on thorax.

Ans) Explanation----------3 marks

- Part of trilobite.
- Consists of segments.
- Median and lateral parts.
- Lateral part known as pleurae.
- Curved downward or backward
- Fulcrum
- Termination of pleurae produced into spine

38) Define the following.

(a) Spire

(b) Peristome

(c) Suture.

Ans) Define----------3 marks

a. Spire - All whorls except the last.

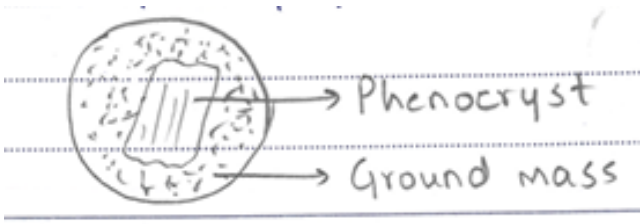
b. Peristome - margin of aperture.

c. Suture - line between two contiguous whorls.

VII. Answer any five of the following questions: (5 x 5 = 25)

39) With a neat labelled diagram, explain porphyritic texture.

Ans) Diagram----------2 marks



Explanation----------3 marks

- Exhibit in igneous rocks.
- larger grain embedded in ground mass.
- larger grain called phenocrysts.
- E.g.: Diorite porphyry

40) Discuss the physical properties of dolerite.

Ans) Explanation----------5 marks

- Hypabyassal igneous rock
- Dark colour (mafic)
- Compact and medium specific gravity
- Mineral pyroxene-plagioclase
- Mineral grains are fine to medium
- occurs as dyke.

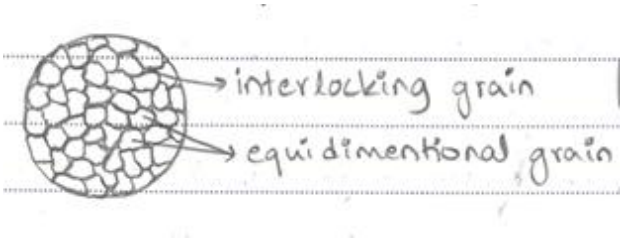
41) Classify sedimentary rocks based on grain size.

Ans) Explanation----------5 marks

- Rudaceous - consist chiefly of gravel, pebbles, cobbles or boulders
- > 2 mm size.
- e.g., conglomerate and breccia.
- Arenaceous - sand grade materials
- 0.1 to 2 mm size.
- e.g., sandstones, grits, arkose, greywacke.
- Argillaceous - consist finest particles of rock,
- < 0.01 mm
- e.g., Shale.

42) With a neat labelled diagram, explain granulose structure.

Ans) Diagram----------2 marks



Explanation----------3 marks

- Metamorphic structure.
- Granular character
- Equidimensional and interlocking
- Foliation absent
- Granulite
- example: marble & quartzite

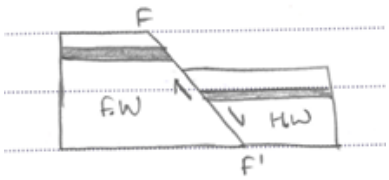
43) Explain the types of joints.

Ans) Explanation----------5 marks

- Dip joint: run parallel to the dip of country rocks.
- Strike joint: run parallel to the strike of the country rocks.
- Oblique joint: runs oblique or diagonal to the strike of a bed.
- Bedding joint: oriented parallel to the bedding planes.
- Columnar joint: produced due to the tension set up during the cooling of magma,
  - especially in basalts and rhyolites.
  - hexagonal and polygonal shapes.

44) With a neat labelled diagram, explain the formation of fault.

Ans) Diagram----------2 marks



Explanation----------3 marks

- opposite walls along fracture/rupture move past each other
- differential movement parallel to the surface of fracture
- Relative displacement

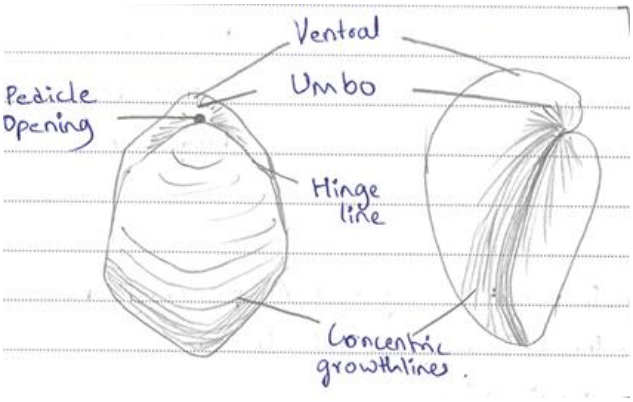
45) Describe the geology of Karnataka.

Ans) Explanation----------5 marks

- Part of Indian shield
- Coastal strip of 5000 km of Tertiary and Quaternary Sediments.
- 31.250 sq.km Deccan basalt
- Archean and proterozoic rock
- Dharwar Craton
  - Greenstone - granite belt
  - Gneisses and granulites.
  - Meta-volcanic sedimentary rock.
  - Peninsular gneiss
  - epicratonic basin or intracratonic sedimentary

46) With a neat labelled diagram, explain Terebratula.

Ans) Diagram----------2 marks

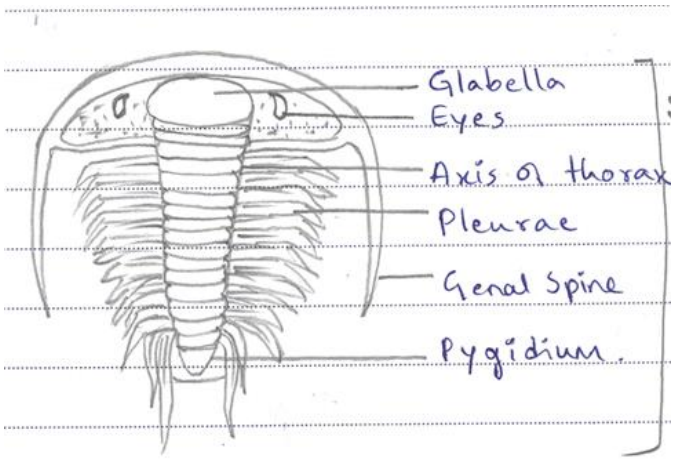


Explanation----------3 marks

- bivalved, equilateral and inequivalved.
- Valves are plano-convex.
- Prominent umbo with pedicle opening.
- Hinge line is short and curved
- Composed of CaCO3
- Cretaceous age.

47) With a neat labelled diagram, explain Paradoxide.

Ans) Diagram----------2 marks



Explanation----------3 marks

- body is large, elongated & posteriorly narrow.
- head by shield is semi-circular.
- long genal spine
- broad glabella
- Arched eyes
- long thorax with 10-20 segments.
- chitinous material
- middle cambrian.