

# Geology Model Test Papers

Q.1 Which one of the following is a geochronologic unit?

- (A) System
- (B) Period
- (C) Member
- (D) Formation

Q.2 Which one of the following must have thickness less than 1 cm?

- (A) Lamina
- (B) Bed
- (C) Stratum
- (D) Layer

Q.3 Which one of the following organisms became extinct during the Cretaceous-Tertiary mass extinction event?

- (A) Trilobite
- (B) Ammonite
- (C) Brachiopod
- (D) Echinoderm

Q.4 Match the geomorphic features in Group I with the related processes in Group II

Group I

- P. Cirque
- Q. Ventifact
- R. Point bar
- S. Tephra

Group II

- 1. Fluvial
- 2. Glacial
- 3. Volcanic
- 4. Aeolian

- (A) P-2, Q-4, R-1, S-3
- (B) P-2, Q-3, R-1, S-4
- (C) P-4, Q-2, R-3, S-1
- (D) P-1, Q-2, R-3, S-4

Q.5 Which one of the given textural features results from exsolution?

- (A) Ophitic
- (B) Perthitic
- (C) Graphic
- (D) Glomeroporphyritic

Q.6 Hardness of groundwater is determined by

- (A) Mohs' scale of hardness
- (B) concentrations of calcium and magnesium
- (C) Bernoulli equation
- (D) Darcy's law

Q.7 Which one of the following defines a hexagonal dipyrmaid?

- (A) A vertical six fold axis of symmetry
- (B) A horizontal mirror plane
- (C) Six vertical mirror planes at an angle of  $30^\circ$  with each other
- (D) A mirror plane that is perpendicular to the vertical six fold axis of symmetry

Q.8 Evidence of Late Paleozoic glaciation is recorded in

- (A) Panchet Formation
- (B) Talchir Formation
- (C) Motur Formation
- (D) Barakar Formation

Q.9 In clastic sediments, the correct order of decreasing grain size is

- (A) Boulder > pebble > silt > sand
- (B) Granule > pebble > clay > silt
- (C) Cobble > granule > silt > clay
- (D) Granule > pebble > sand > silt

Q.10 The correct pair of metal and the ore mineral is

- (A) Nickel - Sphalerite
- (B) Tin - Cassiterite
- (C) Zinc - Pyrolusite
- (D) Lead - Bornite

Q.11 Which of the following change(s) when a dipping bed with a plunging lineation is rotated about a vertical axis?

- (A) Dip amount of bed
- (B) Plunge amount of lineation
- (C) Plunge direction of lineation
- (D) Strike of bed

Q.12 Which of the following indicate(s) the presence of directed stress in a rock?

- (A) Porphyritic texture
- (B) Schistosity
- (C) Gneissosity
- (D) Mylonitic texture

Q.13 The correct combination(s) of ranks and corresponding categories of stratigraphic units is/are

- (A) Formation – Lithostratigraphy
- (B) System – Chronostratigraphy
- (C) Period – Chronostratigraphy
- (D) Group – Biostratigraphy

Q.14 The correct order(s) of stability of silica polymorphs with increasing pressure is/are

- (A) Quartz – Coesite – Stishovite
- (B) Quartz – Stishovite – Coesite
- (C) Tridymite – Coesite – Stishovite
- (D) Tridymite – Stishovite – Coesite

Q.15 Which of the following statement(s) is/are correct?

- (A) An isotropic mineral remains dark through 360° rotation of stage under crossed polars
- (B) Pleochroism is the change of colour of a mineral during rotation under crossed polars
- (C) Minerals of the Triclinic system are optically uniaxial
- (D) Melatope in an interference figure marks the emergence of an optic axis

Q.16 Choose the burrowing form(s) of bivalve.

- (A) Mya
- (B) Teredo
- (C) Pecten

(D) Venus

Q.17 Which of the following environments is/are characterised by predominant deposit of mud?

- (A) Barrier bar
- (B) Lagoon
- (C) Fluvial flood plain
- (D) Fluvial channel

Q.18 Which of the following stratigraphic units belong(s) to Cretaceous?

- (A) Bhuj Formation
- (B) Ariyalur Group
- (C) Patcham Formation
- (D) Katrol Formation

Q.19 Which of the following ore deposit(s) is/are formed only by hydrothermal process?

- (A) 'Sn-W' ore associated with greissenised rock
- (B) Layered type chromite ore associated with dunite-peridotite-pyroxenite
- (C) Vein type gold ore associated with greenstone belt
- (D) Ni-Cu sulphide ore associated with gabbroic rocks.

Q.20 Migmatite is a rock

- (A) in which mafic-rich parts are intermixed with pods or layers of granitic composition
- (B) with melanosome and leucosome
- (C) with a solid residue and partial melt
- (D) which forms at high grade metamorphic conditions

Q.21 The density of a 200 g gabbro sample, cut in the form of a cube, is  $3125 \text{ kg/m}^3$ . The length of the sample is \_\_\_\_\_ mm. (Answer in integer).

Q.22 A drill run of 3 m was carried out in a coalfield site, where rock core samples were recovered only for a cumulative length of 255 cm. The core loss in percentage is equal to \_\_\_\_\_. (Answer in integer).

Q.23 During concretionary growth of a spherical grain of radius  $2 \text{ \AA}$ , the rate of change of surface area with respect to change in radius of the grain is \_\_\_\_\_  $10^{-8} \text{ cm}$  (use  $\pi = 3.14$ ) (Round off to two decimal places).

Q.24 The weight loss during the conversion of 1 mole of gypsum to anhydrite is \_\_\_\_\_ % (atomic weights of Ca = 40.0, S = 32.0, O = 16.0, H = 1.0). (Round off to two decimal places).

Q.25 A bed with an attitude  $020^\circ, 30^\circ \text{ NW}$  is rotated  $55^\circ$  counter-clockwise (looking northerly) along its strike line. The dip of the bed after rotation will be \_\_\_\_\_  $^\circ \text{ NW}$ . (Answer in integer).

Q.26 A 50 kg granite boulder gets dislodged from a cliff of height 20 m and undergoes an absolute vertical free fall. If the acceleration due to gravity is  $10 \text{ m/s}^2$ , the boulder will hit the ground with a velocity of \_\_\_\_\_ m/s.

Q.27 Mass and volume of a fully dried soil sample are 500 g and  $250 \text{ cm}^3$ , respectively. The average density of the particles in the soil sample is  $2.5 \text{ g/cm}^3$ . The void ratio of the soil sample is \_\_\_\_\_%.

Q.28 A tabular ore body of  $9 \text{ km}^2$  area and an average thickness of 9 m has a density of

3000 kg/m<sup>3</sup>. The tonnage (in million tonnes) of the ore body is \_\_\_\_\_.

Q.29 Assume that the orbit of the earth is a circle of radius  $150 \times 10^6$  km. The gravitational constant and the earth's orbital velocity are given as  $6.7 \times 10^{-11}$  Nm<sup>2</sup>/kg<sup>2</sup> and  $30 \times 10^3$  m/s, respectively. The calculated mass of the sun is \_\_\_\_\_  $\times 10^{30}$  kg (rounded off to two decimal places).

Q.30 Two vertical wells penetrating a confined aquifer are 200 m apart. The water surface elevations in these wells are 35 m and 40 m above a common reference datum. The discharge per unit area through the aquifer is 0.05 m/day. Using Darcy's law, the coefficient of permeability is \_\_\_\_\_ m/day.

## ANSWER KEY

Question No.	Question Type (QT)	Subject Name (SN)	Key/Range (KY)	Mark (MK)
1	MCQ	GG	B	1
2	MCQ	GG	A	1
3	MCQ	GG	B	1
4	MCQ	GG	A	1
5	MCQ	GG	B	1
6	MCQ	GG	B	2
7	MCQ	GG	D	2
8	MCQ	GG	B	2
9	MCQ	GG	C	2
10	MCQ	GG	B	2
11	MSQ	GG	C;D	2
12	MSQ	GG	B;C;D	2
13	MSQ	GG	A;B	2

14	MSQ	GG	A;C	2
15	MSQ	GG	A;D	2
16	MSQ	GG	A;D	2
17	MSQ	GG	B;C	2
18	MSQ	GG	A;B	2
19	MSQ	GG	A;C	2
20	MSQ	GG	A;B;C;D	2
21	NAT	GG	40	1
22	NAT	GG	15	1
23	NAT	GG	50.20 to 50.30	1
24	NAT	GG	20.90 to 20.95	1
25	NAT	GG	85	1
26	NAT	GG	20	2
27	NAT	GG	25	2
28	NAT	GG	253	2
29	NAT	GG	2.00 to 2.02	2
30	NAT	GG	2	2