

**SECTION 1 - SECTION 1**

**Question No.1**

Olivine crystallizes in the crystal system of

- Cubic
- Orthorhombic
- Triclinic
- Monoclinic

**Question No.2**

The best coking coal is mostly obtained from

- Neyveli
- Jharia
- Raniganj
- Singareni

**Question No.3**

Which amongst these is not a sedimentary-basin base-metal deposit

- MVT
- SEDEX
- Carlin-type
- Kupferschiefer

**Question No.4**

Which of the following lithostratigraphic units hosts lignite at Nayveli?

- Ariyalur Formation
- Kamthi Beds
- Cuddalore Formation
- Pali Beds

**Question No.5**

The drill holes which are driven vertically and make the sides of the excavation are known as

- Hole directors
- Dressers
- Easers
- Simpors

**Question No.6**

The rock characteristic of contact metamorphism is

- Granulite
- Schist
- Hornfels
- Gneiss

**Question No.7**

Thixotropism is an engineering property shown by:

- Clay deposits
- Weathered laterite
- Sedimentary rocks
- Crystalline rock

**Question No.8**

Which of the following are artiodactyls?

- Chalicotheres
- Hippos
- Titanotheres.
- Rhinos

**Question No.9**

Spinifex texture characterises

- Kimberlite
- Marble
- Basalt
- Komatitie

**Question No.10**

Which of the following is not a benthic Foraminifera

- Nummulites
- Ammonia
- Orbulina
- Elphidium

**Question No.11**

In sedimentary rocks, undulations produced on the surface of loose sediments due to action of wind or waves in shallow water body, are known as

- Rain prints
- Tracks and Trails
- Mud cracks
- Ripple Marks

**Question No.12**



The Precambrian rocks of India can be best correlated on the basis of their

- Mineral deposits
- Isotopic ages
- Lithostratigraphy
- Palaeogeographical studies

**Question No.13**



As per the mining terminology, the exploitation or winning is known as

- The process of extracting the ore or economic mineral from the earth
- The detailed mapping of the ore body
- The process of blasting
- The process of ventilation

**Question No.14**



A fossil with limited stratigraphic range but wide geographical distribution is known as :

- Transported fossil
- Index fossil
- Leaked fossil
- Zone fossil

**Question No.15**



The most primitive suture line in the Trilobites is described as

- Proparian
- Hypoparian
- Gonatoparian
- Opisthoparian

**Question No.16**

Volcanic associated massive sulphide deposits are common in

- Middle Proterozoic
- Late Proterozoic
- Early Proterozoic
- Archean

**Question No.17**

The reservoir rock of Bombay High Oilfield is

- Limestone
- Silt
- Sandstone
- Shale

**Question No.18**

Mineral in the Mohr's scale of hardness are:

- Silicates, Carbonates, Chlorides, Sulfides
- Silicates, Carbonates, Phosphates, Sulfides
- Silicate, Phosphates, Carbonates, Oxides
- Silicates, Phosphates, Oxides, Chlorides

**Question No.19**

A natural gamma ray log exhibits a high response from

- Dolomite
- Shale
- Limestone
- Coal

**Question No.20**

The least amount of radiogenic lead is in

- Zawar Pb-Zn mines
- Pee Dee Belemnite
- Canyon Diablo meteorite
- Hydrothermal vents

**Question No.21**

What is the order of index mineral appearance from low grade to high grade metamorphism?

- Chlorite, muscovite, biotite, garnet, sillimanite, staurolite.
- Chlorite, muscovite, biotite, garnet, staurolite, sillimanite.
- Chlorite, biotite, muscovite, garnet, staurolite, sillimanite.
- Muscovite, biotite, garnet, staurolite, sillimanite, chlorite

**Question No.22**

A pelitic rock is uplifted after high pressure metamorphism in the earth's crust. The mineral transformation due to uplift will be:

- Kyanite to Sillimanite
- Andalusite to Sillimanite
- Andalusite to Kyanite
- Sillimanite to Kyanite

**Question No.23**

Granodiorite is distinguished mineralogically from granite by a predominance of

- Quartz
- Alkali feldspar
- Hornblende
- Plagioclase

**Question No.24**

The main boundary fault separates

- Siwaliks and the Bundelkhand massifs
- Siwaliks and Tertiaries
- Siwaliks and Aravallis
- Upper Vindhyan and Aravallis

**Question No.25**

Arkose is derived from the disintegration of:

- Gabbro
- Ultrabasic rocks
- Granite
- Marble

**Question No.26**

Which of the following equation represents the Bragg's law:

- $\lambda d = n \sin \theta$

- $n\lambda = 2d \sin \theta$
- $\theta = \sin \lambda n$
- $n\lambda = 4d \sin^2 \theta$

**Question No.27**

In folded rocks the tunnel may be excavated along or across the trend of

- Strike line
- Fold axis
- Fault line
- Along dip direction

**Question No.28**

Texture characteristic of Lamprophyres is

- Poikilitic Texture
- Panidiomorphic Texture
- Porphyritic Texture
- Ophitic Texture

**Question No.29**

Celestite consists of

- Sulphate of Strontium
- Sulphide of Barium
- Sulphide of Strontium
- Sulphate of Barium

**Question No.30**

What form of energy is radiated by the earth and trapped by greenhouse gasses to cause global warming?

- Infrared light
- Ultraviolet light
- Radio waves
- Gamma rays

**Question No.31**

Widmanstätten texture could be found in

- Komatiite
- Anorthosite

- Stony meteorites
- Iron meteorites

**Question No.32**

Phlogopite is also referred as

- Magnesium mica
- White mica
- Black mica
- Lithium mica

**Question No.33**

The upper stage of Papaghni Group consisting of fine glassy limestone with bands of Chert and Chalcedony is

- Cumbum
- Vempalle
- Gulcheru
- Pulivendla

**Question No.34**

Thread like prolongations of Graptolites are called

- Polypary
- Virgula
- Stipe
- Sricula

**Question No.35**

Metal content (in metric tonnes) of an ore having specific gravity and assay value of 2.86 and 1.49% respectively in a mining block 40 m long, 30 m wide and with an average thickness of 2.13 m is:

- 208.10 metric tonne
- 108.92 metric tonne
- 130.15 metric tonne
- 150.54 metric tonne

**Question No.36**

The distance between the highest level of water in the reservoir and top of the dam is called:

- Freeboard
- Galleries

- Crest
- Abutment

**Question No.37**



The estimated age of the universe is :

- 4.56 Ga
- 25.7 Ga
- 10.1 Ga
- 13.5 Ga

**Question No.38**



Three of the characters match mammals, rather than reptiles. Which is the odd one out?

- Complex heterodont teeth
- Single middle ear bone
- Bones of pelvis fused
- Enlarged braincase

**Question No.39**



The highest metal/silicate fraction exists on which of these planets

- Mars
- Mercury
- Earth
- Venus

**Question No.40**



What information *can not* be obtained from paleomagnetic measurements?

- Direction of north
- Latitude
- Longitude
- Magnetic intensity

**Question No.41**



Oxygen Fugacity of air with a mole fraction of 0.2095 oxygen at sea level (1.013 bar pressure) is

- 0.460 bar
- 1.000 bar
- 4.835 bar



- 0.212 bar

**Question No.42**

Amongst the garnet minerals, pyrope often occurs as a high-pressure phase in rocks because

- Mg<sup>2+</sup> cations are smaller than Ca<sup>2+</sup> cations
- Substitution of Ca<sup>2+</sup> for cations like Fe<sup>2+</sup> or Mg<sup>2+</sup> causes a change in the bond lengths
- Drop in pressure, leads to an expansion of the M1 and M2 sites
- of the aluminium avoidance rule

**Question No.43**

Dimension of hydraulic conductivity is :

- L T<sup>-1</sup>
- M L<sup>-3</sup>
- L T<sup>2</sup>
- L<sup>3</sup> T<sup>-1</sup>

**Question No.44**

Which mineral will scratch glass, but not pyrite?

- fluorite
- orthoclase
- gypsum
- quartz

**Question No.45**

In pyroxenes the M2 polyhedra is six-coordinated when occupied by

- Mg
- Si
- Na
- Ca

**Question No.46**

A confined sandy aquifer has a thickness of 10 m and transmissivity of 0.75 m<sup>2</sup>/day. Its hydraulic conductivity is in m/day:

- 75 m<sup>2</sup>/day
- 0.75 m/day
- 0.075 m/day

- 0.0075 m/day

**Question No.47**



Which of the following lithostratigraphic unit is of Paleoproterozoic age?

- Vindhyan Supergroup
- Sukma Group
- Aravalli Supergroup
- Dharwar Supergroup

**Question No.48**



In which of the following deposits does groundwater play a role in ore formation

- Kuroko
- Olympic Dam
- Placer gold
- Roll-front uranium

**Question No.49**



The metamorphism involving the combined effect of uniform pressure and heat is described as

- Contact metamorphism
- Dynamothermal metamorphism
- Cataclastic metamorphism
- Plutonic metamorphism

**Question No.50**



A climate pattern that describes the cooling of surface ocean water along the tropical west coast of South America

- Doldrums
- Monsoon
- La Niña
- El Nino

**Question No.51**



Galena crystallizes in the form of

- Cubes and Octahedra
- Cubes and Trapezohedra
- Cubes and Rhombohedra

- Cubes and Dodecahedra

**Question No.52**

A negative feedback mechanism resulted in interglacial periods. Which of these apply?

- Dust plume from meteorite impact
- Cold high pressure centers formed over glaciers
- Plate tectonics and glacial movement
- Change in albedo

**Question No.53**

Which one of the following has the least electrical resistivity?

- Anthracite
- Diamond
- Sulphur
- Clay

**Question No.54**

Magnetism of the earth surface can be determined by:

- Sensitive galvanometer
- Magnetometer
- Astatic deflection magnetometer
- Earth inductor

**Question No.55**

Which of these does not belong to the rhombohedral class of carbonate minerals?

- Strontianite
- Calcite
- Siderite
- Kutnohorite

**Question No.56**

Sitampundi Complex is famous for

- Charnockites
- Magnesites
- Granite
- Anorthosites

**Question No.57**

Raniganj coal belongs to

- Upper Permian
- Lower Carboniferous
- Upper Carboniferous
- Lower Permian

**Question No.58**

Poisson's ratio is given by:

- Stress / Area
- Lateral / Longitudinal strain
- Longitudinal strain / Lateral strain
- Stress / Strain

**Question No.59**

The monazite sands of Kerala are rich in:

- Coal
- Uranium
- Thorium
- PGE

**Question No.60**

In fluid inclusion research, temperature of eutectic means the temperature

- of homogenization of phases
- of melting of a solid phase
- of first recognizable formation of liquid on warming a completely crystalline inclusion
- of nucleation on cooling

**Question No.61**

Signor-Lipps effect in palaeontology deals with

- Theories of mass extinction
- Unknown organisms being represented more in fossil collections
- Sampling error resulting in sudden and gradual extinction patterns both looking gradual
- Out-of-Africa hypothesis

**Question No.62**

Which silicate minerals generally melt at the highest temperature?

- Framework silicate
- Double chain silicate
- Sheet silicates
- Isolated tetrahedra

**Question No.63**

X-ray reflection are allowed for face-centred cubic lattices

- when  $(h + k + l)$  is odd
- when  $h, k$  and  $l$  are either all even or all odd
- when  $(h + k + l)$  is even
- for all possible  $h, k$  and  $l$  values

**Question No.64**

Excavation outside the ore body 'across the dip' is known as

- Level
- Shaft
- Stope
- Cross cut

**Question No.65**

Which of the following stable isotopic ratios is used for estimation of paleo-temperature of seawater?

- $^{13}\text{C}/^{12}\text{C}$
- $^{87}\text{Sr}/^{86}\text{Sr}$
- $^{18}\text{O}/^{16}\text{O}$
- $^{15}\text{N}/^{14}\text{N}$

**Question No.66**

Which is not characteristic of discontinuous reaction

- takes place between phases of fixed chemical composition
- occur at the same P-T conditions for the compositions defined
- take place over a range of P and T as a result of solid solution in one or more of the phases involved
- occur along specific pressure temperature curves

**Question No.67**

The science, art and technology of obtaining reliable measurement, maps, digital elevation models, and other derived products from aerial photography is called:

- Stereoscopy
- Photogrammetry
- DIP
- Remote sensing

**Question No.68**

A chondrite normalized REE pattern of gneissic rock that shows a sharp positive Eu anomaly is attributed to the presence of:

- Quartz in the sample
- Plagioclase in the sample
- Sillimanite in the sample
- Clinopyroxene in the sample

**Question No.69**

Crystal faces poorly formed or irregular

- Anhedral
- Acicular
- Prismatic
- Subhedral

**Question No.70**

Trilobites disappeared at the end of

- Precambrian
- Cretaceous
- Pliocene
- Permian

**Question No.71**

Rn <sup>222</sup>(Radon) and He (Helium) result from the radioactive disintegration of

- Uranium
- None of these
- Thorium
- Argon

**Question No.72**

The Brazilian test is used to determine:

- Compressive strength
- Modulus of elasticity
- Shear strength
- Tensile strength

**Question No.73**

The Middle Gondwanas were formed under

- Cold and humid climate
- Warm and dry climate
- Cold and dry climate
- Warm and humid climate

**Question No.74**

When sausage shaped bodies of one rock layer are sandwiched between layers of different rock types, the structure is described as

- Slickenside
- Mullion
- Boudinage
- Crenulation

**Question No.75**

A garnet with the composition  $(Ca_{0.5}Mg_{0.5})_3Al_2Si_3O_{12}$  has \_\_\_\_\_ ideal configurational entropy in the binary system grossular-pyrope.

- Maximum
- Decreasing
- Exponentially increasing
- Minimum

**Question No.76**

The average density of the Earth:

- $10.54\text{g/cm}^3$
- $6.12\text{ g/cm}^3$
- $5.52\text{ g/cm}^3$
- $4.53\text{ g/cm}^3$

**Question No.77**

Intermediate rocks with no free Quartz is

- Andesite
- Dacite
- Dunite
- Basalt

**Question No.78**

If any loose material is piled up, it has a natural slope of about

- 35°
- 15°
- 25°
- 50°

**Question No.79**

Which of the following rocks is not expected to occur on the moon:

- Sandstone
- Basalt
- Norite
- Anorthosite

**Question No.80**

The Ophitic texture consists of:

- Laths of Plagioclase enclosed in the crystals of augite
- Laths of augite enclosed in the crystals of plagioclase
- Laths of orthoclase enclosed in the crystals of plagioclase
- An intergrowth between plagioclase and Sanidine.

**Question No.81**

The Tummalapalli uranium mineralization in Cuddapah basin occurs in

- Quartzites
- Sandstones
- Shales
- Dolostones

**Question No.82**

Mantle xenoliths are observed in :

- Kimberlite



- Granite
- Pegmatites
- Granulite

**Question No.83**



Mushroom shaped structures having slender columns and wide tops resulting from the abrasive action of wind, are described as

- Driekenters
- Pedestal Rocks
- Ventifacts
- Barchans

**Question No.84**



Which one of the following engineering properties required for rocks, and used as site of construction for foundation purposes, is tested in the field

- Modulus of elasticity
- Compressive strength
- Tensile strength
- Jack test

**Question No.85**



In metapelitic rocks the presence of quartz, muscovite and H<sub>2</sub>O in excess reduces the \_\_\_\_\_ system to the effectively ternary system \_\_\_\_\_

- NCFMASH, ACF
- KFMASH, AFM
- KFMASH, AKF
- CASH, ACF

**Question No.86**



Which of the following is isometric and opaque?

- Chalcopyrite
- Graphite
- Ilmenite
- Pyrite

**Question No.87**



Barite powder is used in

- Drilling
- Refractories
- Abrasives
- Fertilisers

**Question No.88**

According to the Wentworth's scale, particles having a diameter between 64mm-4mm are described as:

- Cobble
- Granules
- Pebble
- Coarse sand

**Question No.89**

The host rock of chromite deposits of Sitampundi complex is:

- Quartz vein
- Peridotite
- Kimberlite
- Anorthosites

**Question No.90**

The magma rising from the deep mantle in a manner as flowing in a vertical pipe is known as mantle plume. The surficial trace of hot plume is called:

- Hot Spot
- Triple junction
- Azores
- Benioff zone

**Question No.91**

Geotectonic setting of the oceanic lithosphere preserved in Semail ophiolite of Oman

- island arc – spreading ridge intersection
- cordilleran arc
- supra-subduction zone
- fast-spreading mid-ocean ridge

**Question No.92**

In which one of the following configurations the electrodes are

uniformly spaced?

- Wenner array
- Pole-Pole array
- Dipole-Dipole array
- Schlumberger array

**Question No.93**

Taxodont dentition is observed in

- Pecten
- Unio
- Mytilus
- Arca

**Question No.94**

Porphyry-type Cu deposits are associated with:

- Mid-oceanic ridge setting
- Ocean-Ocean subduction setting
- Intra-cratonic setting
- Continent-Ocean subduction setting

**Question No.95**

Singhbhum and Bhundelkhand granites are examples of

- Phacolith
- Laccolith
- Lopolith
- Batholith

**Question No.96**

Migmatite with small-scale alternating layers of neosome and mesosome

- Stromatite
- Nebulite
- Diktyonite
- Agmatite

**Question No.97**

To distinguish between different rock types, a sensor with high \_\_\_\_\_ resolution is best:

Spatial and temporal

- 
- Spatial and radiometric
- Spectral and radiometric
- Spectral and temporal

**Question No.98**



Greyish white alteration product of ilmenite

- Perovskite
- Ochre
- Martite
- Leucoxene

**Question No.99**



Ridge like deposits of coarse sand and gravels found along the fringes of flood plains are known as:

- Natural levees/ embankments
- Bajada
- Alluvial cone
- Alluvial fan

**Question No.100**



A fold generated by a straight line moving parallel to itself in space

- non-cylindrical fold
- symmetric fold
- cylindrical fold
- asymmetric fold