

PUMDET-2018

82220001

Subject: Applied Geology

(Booklet Number)

Duration: 90 minutes

Full Marks: 100

Instructions

1. All questions are of objective type having four answer options for each. Only one option is correct. Correct answer will carry full marks 2. In case of incorrect answer or any combination of more than one answer, $\frac{1}{2}$ marks will be deducted.
2. Questions must be answered on OMR sheet by darkening the appropriate bubble marked A, B, C, or D.
3. Use only Black/Blue ball point pen to mark the answer by complete filling up of the respective bubbles.
4. Do not make any stray mark on the OMR.
5. Write question booklet number and your roll number carefully in the specified locations of the OMR. Also fill appropriate bubbles.
6. Write your name (in block letter), name of the examination centre and put your full signature in appropriate boxes in the OMR.
7. The OMRs will be processed by electronic means. Hence it is liable to become invalid if there is any mistake in the question booklet number or roll number entered or if there is any mistake in filling corresponding bubbles. Also it may become invalid if there is any discrepancy in the name of the candidate, name of the examination centre or signature of the candidate vis-a-vis what is given in the candidate's admit card. The OMR may also become invalid due to folding or putting stray marks on it or any damage to it. The consequence of such invalidation due to incorrect marking or careless handling by the candidate will be sole responsibility of candidate.
8. Candidates are not allowed to carry any written or printed material, calculator, pen, docu-pen, log table, any communication device like mobile phones etc. inside the examination hall. Any candidate found with such items will be reported against & his/her candidature will be summarily cancelled.
9. Rough work must be done on the question paper itself. Additional blank pages are given in the question paper for rough work.
10. Hand over the OMR to the invigilator before leaving the Examination Hall.

ROUGH WORK ONLY

1.	Crystalline substances too finely divided for the optical microscope but discernible through X-ray defraction techniques are called (A) Amorphous (B) Microcrystalline (C) Cryptocrystalline (D) Diffractocrystalline
2.	Which of the following matched pairs correctly associates the plutonic rock with its extrusive equivalent? (A) Syenite - Trachyte (B) Gabbro – Dacite (C) Granite – Andesite (D) Diorite – Aplite
3.	Which one is not a copper (Cu) bearing mineral? (A) Bornite (B) Covellite (C) Braunite (D) Azurite
4.	A fault that brings ultra basic igneous rocks into direct contact with typical shales should be recorded as (A) a negative gravitational anomaly (B) a positive gravitational anomaly (C) a zero gravitational anomaly because the specific gravity of the two rock types is similar. (D) negative or positive anomaly depending upon whether one uses the torsion balance or the pendulum method.
5.	In considering the strain ellipsoid, shear fractures are most likely to occur at angles of about (A) 30° to the axis of greatest strain (B) 60° to the axis of greatest stress (C) 30° to the axis of least stress (D) 30° to the axis of least strain
6.	The phase difference between two rays emerging from a mineral examined in polarized light varies inversely with (A) Mineral thickness (B) The wave length of the light source (C) The difference in indices of refraction of the two rays emerging from the mineral (D) The chemical composition of the mineral.
7.	Of the following high specific gravity minerals, the one hardest to concentrate by gravity is (A) Ilmenite (B) Monazite (C) Magnetite (D) Molybdenite
8.	The division between the zone of aeration and the zone of saturation is called the (A) Interstitial zone (B) Capillary Fringe (C) Belt of Soil Moisture (D) Water Table

9.	Tholeiite basalts, andesites and rhyolites occur mainly (A) In the Intra-Pacific region (B) As Vesuvius type eruption (C) In the cores of folded mountains (D) As extrusive continental lava flows.
10.	An impure carbonate rock is subjected to thermal metamorphism. The net chemical effect in to (A) Decrease silica content (B) Produce glaucophane schist (C) Drive off Carbon dioxide (D) Produce cordierite
11.	The average density of the Earth is 5.5 gms / c.c. Since the density of rocks in the crust averages about 2.7 gms / c.c. We may infer that (A) The outer core is molten. (B) The density must increase to a maximum of 5.5 gms / c.c with depth (C) The density of the core must be greater than 5.5 gms / c.c (D) The mantle is composed of heavy silicates.
12.	The particle size that requires the least lifting velocity on the part of a stream current is (A) Clay (B) Medium sand (C) Coarse sand (D) Pebble
13.	Khetri area is famous for (A) Uranium mineralization (B) Gold mineralization (C) Copper mineralization (D) Nickel mineralization
14.	Which one of the following is not a common fault plane feature? (A) Mylonite (B) Slickensides (C) Pseudo tachyllite (D) Roche moutonnee
15.	Which one of the following deposits was probably not formed as a direct consequence of the metamorphism of plant matter? (A) Peat (B) Bituminous coal (C) Graphite (D) Anthracite coal
16.	A rock consisting of about fifty percent pyroxene and fifty percent olivine would be called (A) Dunite (B) Peridotite (C) Gabbro (D) Amphibolite
17.	The refractive indices of a mineral section are $\omega = 1.548$ and $\epsilon = 1.642$. Then which of the following statement is true? (A) The mineral belongs to uniaxial positive (B) The mineral belongs to uniaxial negative (C) The mineral belongs to biaxial positive (D) The mineral belongs to biaxial negative

18.	Which of the following does not occur as a native element? (A) Carbon (B) Zinc (C) Gold (D) Copper
19.	The earth's outer core is thought to be molten because, (A) P waves are not transmitted through it. (B) S waves are not transmitted it. (C) Information from meteorites suggests this. (D) L waves are not transmitted through it.
20.	Which of the following minerals has two different values of hardness in different orientation? (A) Quartz (B) Fluorite (C) Kyanite (D) Feldspar
21.	Shadow zone for direct P-wave arrival takes place between (A) 103° to 163° (B) 73° and 103° (C) 103° to 143° (D) 163° and 173°
22.	A strike – slip fault is one in which the net slip (A) is parallel to the strike of the adjacent strata (B) follows regional structure (C) contains both a large vertical and horizontal component (D) is along the strike of the fault plane
23.	Gossan or cap rock out crops give clues to the type of one body below chiefly by their (A) Coarse cellular structure (B) Wavy out crop pattern (C) Distinctive coloring (D) Preponderance of limonite
24.	The Mohorovicic discontinuity is defined as (A) the Crust-Mantle boundary (B) the change from gravitic sial to the basaltic sima (C) the depth of shallow earthquakes (D) the depth below which isostatic adjustment takes place.
25.	Which of the following is not a feature of glacial erosion? (A) Cirques (B) U-shaped valleys (C) Roches moutonnees (D) Valley trains
26.	Which of the following pairs of minerals have the most similar atomic structure? (A) Calcite - Anorthite (B) Muscovite – Hematite (C) Halite – Galena (D) Graphite – Diamond
27.	Which of the following precious and relatively rare minerals is associated with ultra basic igneous rocks? (A) Gold (B) Silver (C) Platinum (D) Uranium

28.	Boudinage is the result of the (A) Stretching of a competent bed parallel to the limbs of a fold (B) intrusion of fluids parallel to the fold axis (C) exfoliation on a small scale common in most rocks (D) refolding of previous folds.
29.	Hypidiomorphic texture is common in (A) Aplite (B) Komatitite (C) Granite (D) Basalt
30.	Which of the following minerals is member of the Molis scale of hardness? (A) Tourmalive (B) Muscovite (C) Garnet (D) Topaz
31.	Which physical property of a mineral least favour its mechanical concentration? (A) High Specific Gravity (B) High Sphericity (C) High degree of hardness (D) Highly platy habit
32.	Which does not belong to the definition of a mineral? (A) Definite crystal structure (B) Definite or limited chemical composition (C) Definite cleavage (D) Inorganic compound in solid state
33.	The contact between the conglomerate and granite is best described as (A) a disconformity (B) a paraconformity (C) an angular unconformity (D) a non - conformity
34.	Which choice correctly associates crystal system and crystal form (or class) with the mineral which characteristically crystallizes in that form or class? (A) Isometric – Octahedral – Quartz (B) Tetragonal – Prismatic – Tourmaline (C) Monoclinic – Rhombic – Sulphur (D) Triclinic – Pinacoidal – Anorthite
35.	The crystal system containing minerals that produce uniaxial interference figures in convergent polarized light in the (A) Isometric (B) Tetragonal (C) Orthorhombic (D) Monoclinic
36.	The highest order interference colours are obtained in a quartz wedge cut (A) Parallel to the optic axis (B) At right angles to the optic axis (C) diagonal to the optic axis (D) Parallel to the obtuse bisectrix
37.	The ‘Ring of Fire’ refers to a belt of vulcanism and tectonic disturbances rimming (A) eastern South America (B) the Indian Ocean (C) the Pacific Ocean (D) the North Atlantic Ocean
38.	Emerald is a gem variety of the mineral (A) Tourmaline (B) Beryl (C) Corundum (D) Topaz

39.	Minerals exhibiting a constant index of refraction, no matter what their orientation with respect to the light source are said to be (A) Triclinic (B) Monoclinic (C) Anisotropic (D) Isometric
40.	Which one of the following sedimentary rocks is the least well sorted? (A) Arkose (B) Subgray wacke (C) Tillite (D) Orthoquartzite
41.	Which one of the following primary features is least useful in distinguishing the top from bottom in sedimentary strata? (A) Cross bedding (B) Local unconformity such as channelling (C) Fossil shells, whether concave up or down (D) Casts of current ripple marks.
42.	An anisotropic mineral grain is brought into its dark position between the crossed nicols of the polarising microscope. Which statement may be taken as correct from this fact? (A) The fast ray is parallel to the upper nicol. (B) The slow ray is parallel to the upper nicol. (C) The traces of the vibration planes of the mineral are parallel to the cross-wires of the microscope. (D) The mineral is of the Isometric system.
43.	The concept of metamorphic zones was first developed by (A) Billings (B) Turner (C) Harker (D) Barrow
44.	A sediment has a diameter in phi size units of – 3. Its diameter in millimetre is (A) 3 mm (B) 0.3 mm (C) 0.8 mm (D) 8 mm
45.	The best proof of the similarity of age of widely separated strata is (A) litho logic similarity (B) identical facies (C) similar sequence (D) identical fauna
46.	A primitive fish without paired appendages or jaws, but with a head of bony armor is the, (A) Placodermi (B) Agnatha (C) Tunicata (D) Osteichthyes
47.	Dike rocks that are made up of more than one – third dark minerals and have an abundance of euhedral crystals in a groundmass of alkalic feldspar are called (A) Gabbros (B) Peridotites (C) Pegmatites (D) Lamprophyres
48.	Which one of the following usually decreases in a downstream direction? (A) Velocity (B) Discharge (C) Particle size (D) Water volume
49.	A mineral not of monoclinic system is (A) Pyroxene (B) Garnet (C) Orthoclase (D) Amphibole

50.

A Miller indices of 011 means that

- (A) the crystal face is parallel to the a – axis but intersects the other two axes at same distances.
- (B) the crystal face is parallel to the 'b' and 'c' axes but intersects the a – axis.
- (C) the crystal face is parallel to the a – axis but intersects the other two axes at their unit relative distances.
- (D) the crystal is exclusive to the isometric system.