

# PUMDET-2023

Subject : APPLIED GEOLOGY

(Booklet Number)



Duration : 90 Minutes

No. of Questions : 50

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,  $\frac{1}{2}$  mark 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 ink ball point pen** to mark the answer by complete filling up of the respective bubbles.
4. Mark the answers only in the space provided. 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 Sheet**. Also fill appropriate bubbles.
6. Write your name (in block letter), name of the examination centre and put your signature (as is appeared in Admit Card) in appropriate boxes in the OMR Sheet.
7. The OMR Sheet is liable to become invalid if there is any mistake in filling the correct bubbles for question booklet number/roll number or if there is any discrepancy in the name/signature of the candidate, name of the examination centre. The OMR Sheet 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, wristwatch, any communication device like mobile phones, bluetooth devices etc. inside the examination hall. Any candidate found with such prohibited items will be **reported against** and his/her candidature will be summarily cancelled.
9. Rough work must be done on the question booklet itself. Additional blank pages are given in the question booklet for rough work.
10. Hand over the OMR Sheet to the invigilator before leaving the Examination Hall.
11. Candidates are allowed to take the Question Booklet after examination is over.

Signature of the Candidate : \_\_\_\_\_  
(as in Admit Card)

Signature of the Invigilator : \_\_\_\_\_



**PUMDET-2023**  
**SPACE FOR ROUGH WORK**



**PUMDET-2023**

1. Which of the following is not a process of erosion by rivers ?  
(A) Attrition (B) Corrasion  
(C) Corrosion (D) Deflation
  
2. Which of the following is an Eon of the geological time scale ?  
(A) Proterozoic (B) Paleozoic  
(C) Mesozoic (D) Cenozoic
  
3. Which of the following is associated with divergent plate margins ?  
(A) Island arcs (B) Deep sea trenches  
(C) Deep focus earthquakes (D) Rift valleys
  
4. Which one of the following primary features is unimportant in distinguishing the top from bottom in stratigraphy ?  
(A) Truncated Cross bedding (B) Graded bedding  
(C) Mud cracks (D) Pillow structure in basalt
  
5. The Supercontinent Pangea existed during the \_\_\_\_\_.  
(A) Proterozoic times  
(B) Proterozoic - early Palaeozoic times  
(C) Late Palaeozoic – early Mesozoic times  
(D) Late Mesozoic - early Cenozoic times
  
6. Which of the following is a phosphorite mine ?  
(A) Khetri (B) Zawar  
(C) Jhamarkotra (D) Jaduguda



**PUMDET-2023**

7. For metamorphic rocks, you should expect Jadeite in  
(A) Hornfelsic rock (B) Greenschist rock  
(C) Amphibolite (D) Eclogite
8. Connate water refers to  
(A) Meteoric water  
(B) Magmatic water  
(C) Hydrothermal water  
(D) Water trapped in the pores of the sediments
9. Bouguer anomaly is associated with  
(A) Seismic method (B) Gravity method  
(C) Magnetic method (D) Electrical method
10. Sinistral Gastropod is represented by  
(A) Turritella (B) Physa  
(C) Unio (D) Conus
11. Flash figure is produced when  
(A) mineral section is cut perpendicular to the optic axis.  
(B) mineral section is cut parallel to the optic axis.  
(C) mineral section is cut at an angle of  $25^\circ$  to the optic axis.  
(D) mineral section is cut at an angle of  $40^\circ$  to the optic axis.
12. Pick out the correct answer.  
(A) Inner core is liquid. (B) Outer core is liquid.  
(C) Upper mantle is liquid. (D) Lower crust is liquid.



**PUMDET-2023**

13. Black sands are available from
- (A) Singhbhum (B) Kerala  
(C) Meghalaya (D) Bastar
14. Which of the following are examples of hotspots ?
- (A) Aleutian Islands (B) Hawaiian Islands  
(C) Andaman and Nicobar Islands (D) Java and Sumatra Islands
15. Decollements refer to deformation structures that involve :
- (A) Independent styles of deformation in the rock above and below it.  
(B) Vertical fault plane  
(C) Horizontal fault plane  
(D) Folded unconformity
16. Which of the following is correct older to younger order of the stratigraphic units of the Singhbhum Granitic complex ?
- (A) Older Metamorphic Group, Iron Ore Group, Dhanjori Group, Kolhan Group  
(B) Iron Ore Group, Older Metamorphic Group, Dhanjori Group, Kolhan Group  
(C) Older Metamorphic Group, Iron Ore Group, Kolhan Group, Dhanjori Group  
(D) Iron Ore Group, Older Metamorphic Group, Kolhan Group, Dhanjori Group
17. Stratiform chromite occurs in
- (A) Early magmatic deposits (B) Late magmatic deposits  
(C) Pegmatitic deposits (D) Hydrothermal deposits



**PUMDET-2023**

**18.** If  $W_y$  is the volume of water drained and  $V$  is the bulk volume of the rock, then its specific yield  $S_y$  is mathematically expressed as

(A)  $S_y = \frac{W_y}{V}$

(B)  $S_y = \sqrt{\frac{W_y}{V}}$

(C)  $S_y = \frac{V}{W_y}$

(D)  $S_y = \sqrt{\frac{V}{W_y}}$

**19.** Isostasy refers to

(A) Plate convergence

(B) Floating equilibrium among several crustal blocks

(C) Tripple plate juncture

(D) Plate divergence

**20.** The Earth's magnetic field is due to

(A) Convection currents in the outer mantle

(B) Convection currents in the inner mantle

(C) Convection currents in the outer core

(D) Convection currents in the inner core

**21.** Aristotle's lantern is found in

(A) Ammonoids

(B) Gastropods

(C) Echinoids

(D) Pelecypods

**22.** 'Melatopes' refer to

(A) Patchy extinction

(B) Parallel extinction

(C) Melanocratic minerals

(D) Points of emergence of optic axes



**PUMDET-2023**

23. Mark the odd pair.
- (A) Ventifact – Wind (B) Burchan - Glacier  
(C) U-shaped Valley - Glacier (D) V-shaped Valley - Glacier
24. The horizontal component of the dip separation of a fault is known as the
- (A) Throw (B) Heave  
(C) Strike-slip (D) Dip-slip
25. Which one of the following is not a common fault plane feature ?
- (A) Slickenside (B) Mylonite  
(C) Varve (D) Pseudo tachyllite
26. By which of the following processes the Talchir Boulder beds of the Gondwana Supergroups are believed to have deposited ?
- (A) Fluvial (B) Glacial  
(C) Lacustrine (D) Shallow Marine
27. In which of the following rocks could the diamond be found ?
- (A) Kimberlite (B) Gabbro  
(C) Syenite (D) Granite
28. Which of the following rocks will serve as a good aquifer ?
- (A) Well sorted, cement free sandstone  
(B) Unsorted sandstone containing ferruginous cement  
(C) Well sorted sandstone containing ferruginous cement  
(D) Unsorted, cement free sandstone



**PUMDET-2023**

- 29.** Mantle - Core discontinuity is called
- (A) Gutenberg discontinuity
  - (B) Moho discontinuity
  - (C) Conrad discontinuity
  - (D) Hofmann's discontinuity
- 30.** Which of the following is known as the half horse ?
- (A) *Eohippus*
  - (B) *Epihippus*
  - (C) *Orohippus*
  - (D) *Mesohippus*
- 31.** Which doesn't belong to the definition of a mineral ?
- (A) Definite crystal structure
  - (B) Definite or a range of chemical composition
  - (C) Naturally occurring
  - (D) Inorganic compound in solid or liquid state
- 32.** Which of the following planets has lowest density ?
- (A) Venus
  - (B) Earth
  - (C) Jupiter
  - (D) Saturn
- 33.** A fold having  $15^\circ$  N40E plunging hinge line and  $70^\circ$  NW dipping axial plane will be described as
- (A) Gently plunging, steeply inclined fold
  - (B) Moderately plunging, steeply inclined fold
  - (C) Gently plunging, moderately inclined fold
  - (D) Moderately plunging, moderately inclined fold





**PUMDET-2023**

34. In which type of faults, one can't determine the hanging wall and footwall ?
- (A) Dip fault (B) Inclined fault  
(C) Vertical fault (D) Reverse fault
35. An arenite is made up of 75% quartz, 20% feldspar and 5% rock fragments. According to Folk's sandstone classification, it is a/an \_\_\_\_\_.
- (A) Sublitharenite (B) Subarkose  
(C) Arkose (D) Lithic arkose
36. The hardest oxide mineral is
- (A) Magnetite (B) Hematite  
(C) Corundum (D) Ilmenite
37. In a biaxial mineral X vibration direction is formed to be the acute bisectrix. The mineral is
- (A) Optically positive (B) Optically negative  
(C) Neither negative nor positive (D) Isotropic
38. Four most abundant elements in the Earth's continental crust, in decreasing order of abundance are
- (A) O, Si, Al and Fe (B) O, Si, Fe and Al  
(C) Si, O, Al and Fe (D) Si, O, Fe and Al
39. In an unconformity, a lower group of strata is folded while the upper group of strata is horizontal. The type of unconformity in this case is best described as
- (A) Disconformity (B) Non-conformity  
(C) Angular unconformity (D) Para conformity



**PUMDET-2023**

40. Lapsaburu area is famous for
- (A) Sillimanite deposit (B) Coal deposit  
(C) Copper deposit (D) Kyanite deposit
41. Uniaxial minerals incorporate crystal that crystallize in
- (A) Trigonal, Tetragonal and Hexagonal systems  
(B) Monoclinic and Triclinic system  
(C) Triclinic system  
(D) Orthorombic system
42. Which of the following layers of the atmosphere contains maximum ozone ?
- (A) Troposphere (B) Stratosphere  
(C) Mesosphere (D) Thermosphere
43. Gouge is associated with
- (A) Paraconformity (B) Non- conformity  
(C) Recumbent fold (D) Fault
44. Find out the incorrect pair.
- (A) Magnesite – placer deposit (B) Gypsum – evaporite deposit  
(C) Gold – placer deposit (D) Diamond – dissemination deposit
45. A crystal face intersects ‘a’ axis at half of its unit length, ‘b’ axis at its unit length and runs parallel to the ‘c’ axis. The miller indices of the crystal face would be
- (A) (012) (B) (120)  
(C) (210) (D) (121)



**PUMDET-2023**

46. By weight, what is the percentage of dissolved substances in sea water ?
- (A) 3.5% (B) 6.5%
- (C) 9.5% (D) 12.5%
47. A glassy material found on some large faults is formed by melting caused by fractional heating is known as the \_\_\_\_\_.
- (A) Slickenside (B) Tachyte
- (C) Pseudotachylyte (D) Mylonite
48. Which of the following mica contains lithium ?
- (A) Biotite (B) Muscovite
- (C) Lepidolite (D) Phlogopite
49. A type of relatively fast landslide in which the slip surface is concave is termed as
- (A) Topple (B) Sheet slide
- (C) Slump (D) Block slide
50. Popular gemstone Ruby is a variety of \_\_\_\_\_.
- (A) Garnet (B) Tourmaline
- (C) Quartz (D) Corundum



**PUMDET-2023**

**SPACE FOR ROUGH WORK**

