

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA, VADODARA

Ph. D. ENTRANCE TEST (PET) – 7th August 2022

Signature of Invigilator

Roll.
No.

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Paper - II
Geology (22/27)

Maximum Marks: 50

No. Of Printed Pages: 8

Instruction for the Candidate:

1. This paper consists of **FIFTY (50)** multiple choice type questions. Each Question carries **ONE (1)** mark.
2. There is no Negative Marking for Wrong Answer.
3. A separate OMR Answer Sheet has been provided to answer questions. Your answers will be evaluated based on your response in the OMR Sheet only. No credit will be given for any answering made in question booklet.
4. Defective question booklet or OMR if noticed may immediately replace by the concerned invigilator.
5. Write roll number, subject code, booklet type, category and other information correctly in the OMR Sheet else your OMR Sheet will not be evaluated by machine.
6. Select most appropriate answer to the question and darken appropriate oval on the OMR answer sheet, with black / blue ball pen only. **DO NOT USE PENCIL** for darkening. In case of over writing on any answer, the same will be treated as invalid. Each question has exactly one correct answer and has four alternative responses (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.
Example: (A) (●) (C) (D) where (B) is correct response.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. Calculators, Log tables any other calculating devices, mobiles, slide rule, text manuals etc are **NOT** allowed in the examination hall. If any of above is seized from the candidates during examination time; he/ she will be immediately debarred from the examination and corresponding disciplinary action will be initiated by the Center Supervisor as deemed fit.
10. **DO NOT FOLD** or **TEAR** OMR Answer sheet as machine will not be able to recognize torn or folded OMR Answer sheet.
11. **You have to return the OMR Answer Sheet to the invigilator at the end of the examination compulsorily** and must not carry it with you outside the Examination Hall. You are however, allowed to carry original question booklet on conclusion of examination.

Paper - II
Geology (22/27)

Note: This paper contains **FIFTY (50)** multiple-choice questions. Each Question carries **ONE (1)** mark.

- 01) Most of the faults in Himalayan region are
A) Normal faults
B) Thrust Faults
C) Strike-slip
D) Transform Faults
- 02) The maximum curvature of a cylindrical folded surface occurs at the
A) Fold Axis
B) Limb
C) Axial Plane
D) Hinge
- 03) Which one of the following minerals is a lithium Mica?
A) Lepidolite
B) Phlogopite
C) Muscovite
D) Biotite
- 04) On a 1:50,000 scale Toposheet, the distance between upper and lower traces of a bed is 5 cm. The actual distance on ground in kilometers is
A) 2
B) 5
C) 2.5
D) 4
- 05) Match the following Minerals from Group I with appropriate Chemical composition in Group II
- | Group I | Group II |
|------------------|---------------------|
| P. Rhodochrosite | 1. FeCO_3 |
| Q. Smithsonite | 2. PbCO_3 |
| R. Cerussite | 3. CuFeS_2 |
| S. Siderite | 4. MnCO_3 |
| | 5. ZnCO_3 |
- A) P-5, Q-4, R-2, S-3
B) P-4, Q-5, R-3, S-1
C) P-4, Q-5, R-2, S-1
D) P-5, Q-1, R-4, S-3
- 06) The lava flows of peridotitic composition are designated as
A) Komatiites
B) Tholeiites
C) Phonolites
D) Tachylites
- 07) The metamorphic rock Mylonite represents
A) Contact Metamorphism
B) Dynamic Metamorphism
C) Burial metamorphism
D) Regional metamorphism
- 08) A geologist reporting particular sediment as well sorted, what does he mean?
A) Sediment contains mixture of particles of varying size
B) Sediment composed of only two different types of mineral grains
C) Most of the particles in the sediment are of uniform size
D) Most of the particles are angular
- 09) A sandstone indicating an acid volcanic source is like to compose which of the following characteristic feldspar
A) Orthoclase
B) Sanidine
C) Labradorite
D) Microcline
- 10) Which one of the following micro-fossil groups is NOT exclusively marine?
A) Radiolaria
B) Conodonta
C) Ostracoda
D) Coccolithophore
- 11) Past seawater temperature can be reconstructed from the
A) Oxygen isotopic composition of the calcareous foraminifera
B) Carbon isotopic composition of agglutinated foraminifera
C) Oxygen isotopic composition of agglutinated foraminifera
D) Carbon isotopic composition of calcareous foraminifera
- 12) The dominant constituent of ultramafic rocks in the earth's mantle is
A) Biotite
B) Plagioclase
C) Orthoclase
D) Olivine
- 13) Which one of the following can be estimated from SP log against a saline-water saturated sandstone formation encountered in a well?
A) Permeability
B) Depth of invasion
C) Degree of water saturation
D) Resistivity of formation water
- 14) The deflection of ocean currents in the northern and southern hemispheres is due to
A) Monsoon effect
B) Coriolis effect
C) El Nino effects
D) Thermohaline circulation

- 15) Flat-topped volcanoes on the ocean floor is known as
 A) Plateaus
 B) Oceanic ridges
 C) Guyots
 D) Seamounts
- 16) The supercontinent Pangaea begin to break up during
 A) Cenozoic
 B) Paleozoic
 C) Mesozoic
 D) Proterozoic
- 17) Which of the following physical properties of rocks has the widest range of variation?
 A) Seismic velocity
 B) Magnetic permeability
 C) Electrical resistivity
 D) Dielectric permittivity
- 18) The altitudinal distance of a geostationary satellite from the earth is about:
 A) 44,000 km
 B) 36,000 km
 C) 26,000 km
 D) 30,000 km
- 19) Which is the most common metamorphic rock found at mid-oceanic ridges
 A) Greenstone
 B) Eclogite
 C) Hornfels
 D) Blueschist
- 20) Brazilian test used to determine
 A) Tensile strength
 B) Shear strength
 C) Transverse strength
 D) Crushing strength
- 21) In which of the following folds the axial plane is horizontal
 A) Overturned fold
 B) Symmetrical fold
 C) Recumbent fold
 D) Asymmetrical fold
- 22) Which one of the following is the correct order of sediment size from smallest to largest?
 A) Clay, silt, sand, granule, pebble, cobble, boulder
 B) Clay, silt, sand, granule, cobble, pebble, boulder
 C) Salt, clay, silt, Sand, pebble, cobble, boulder
 D) Clay, silt, sand, granule, pebble, boulder, cobble
- 23) Match the causative processes given in the Group I with the resulting landforms given in Group II
- | <u>Group I</u> | <u>Group II</u> |
|-----------------------|-----------------|
| P. Glacial Erosion | 1. Drumlins |
| Q. Wind Erosion | 2. Point bar |
| R. Glacial Deposition | 3. Yardangs |
| S. Fluvial Deposition | 4. Cirque |
- A) P-4, Q-2, R-3, S-1
 B) P-4, Q-3, R-1, S-2
 C) P-1, Q-3, R-2, S-4
 D) P-1, Q-4, R-2, S-3
- 24) The amount water that can be transmitted horizontally by the full saturated thickness of the aquifer under a hydraulic gradient of "1" is termed as
 A) Specific yield
 B) Transmissivity
 C) Permeability
 D) Hydraulic conductivity
- 25) Hawaiian Island chain is the result of
 A) Intraplate hot spot activity
 B) Collision of two oceanic plates
 C) Divergence of two oceanic plates
 D) Interplate hot spot activity
- 26) Which of the following is not related to Himalayan thrust fold system?
 A) Main Central Thrust
 B) Great Boundary Fault
 C) Main boundary thrust
 D) Indus-tsangpo suture
- 27) In geological mapping in the field, following a dried-up nala you will encounter younger and younger formations if you walk
 A) opposite to dip direction of strata
 B) in the dip direction of strata
 C) perpendicular to the dip direction
 D) in strike direction
- 28) Syn-sedimentary deformational structures a result of:
 A) Low sedimentation rate
 B) Marine Transgression
 C) High sedimentation rate
 D) Marine regression
- 29) The Neogene Period includes
 A) Paleocene and Eocene
 B) Paleocene and Pliocene
 C) Paleocene, Eocene and Oligocene
 D) Oligocene, Miocene and Pliocene

- 30) The line representing the intersection of the axial plane of a fold with any bed of the fold is
 A) Plunge
 B) Axial surface
 C) Hinge line
 D) Axis of fold
- 31) Principle of Order of superposition is proposed by
 A) Charles Lyell
 B) C Sorby
 C) Walther
 D) Steno
- 32) Match the Mineral habits from Group I with appropriate minerals in Group II
- | Group I | Group II |
|----------------|-----------------|
| P. Fibrous | 1. Olivine |
| Q. Acicular | 2. Kyanite |
| R. Columnar | 3. Beryl |
| S. Bladed | 4. Chrysotile |
| | 5. Sillimanite |
- A) P-5, Q-4, R-2, S-3
 B) P-4, Q-5, R-3, S-2
 C) P-4, Q-5, R-2, S-1
 D) P-5, Q-1, R-4, S-3
- 33) Mixed rocks containing the characteristics of both igneous and high-grade metamorphic rocks are
 A) Hornfels
 B) Migmatites
 C) Greenstones
 D) Mylonite
- 34) Which one of the following is Not True about Plagioclase?
 A) A massive or crystalline structure
 B) is composed of K mainly
 C) having 2 sets of cleavages
 D) is Composed of either Na, Ca, or Al
- 35) Match the sedimentary rocks and their features given in the Group I with the resulting depositional environments in Group II
- | Group I | Group II |
|--|-----------------|
| P. Chalk with Coccolith | 1. Glacial |
| Q. Sandstone with herring-bone cross bedding | 2. Eolian |
| R. Poorly sorted sediments with faceted and striated pebbles | 3. Tidal |
| S. Well-sorted, cross-bedded (4-5mts) sandstone | 4. Pelagic |
| | 5. Sabhka |
- A) P-4, Q-2, R-3, S-1
 B) P-4, Q-3, R-1, S-2
 C) P-1, Q-3, R-2, S-4
 D) P-1, Q-4, R-2, S-3
- 36) What likely environment is implied by the presence of halite or gypsum
 A) Fluvial
 B) Freshwater Lake
 C) An evaporate lake
 D) Glacial
- 37) Narmada-Tapti region of central India represents a ---
 -----?
 A) Failed rift
 B) Failed Island arc
 C) Palaeosuture
 D) Trench
- 38) The excess fluoride in drinking water causes?
 A) Tuberculosis
 B) Arsenosis
 C) Dental Fluorosis
 D) Blue baby syndrome
- 39) Mud-supported limestone containing greater than 10% allochems is called
 A) graywacke
 B) packstone
 C) wackestone
 D) Mudstone
- 40) In which of the following localities does Petroleum occur?
 A) Cuddapa
 B) Vindhyan
 C) Cambay
 D) Pranhita
- 41) Eparchean unconformity separates geological units of
 A) early Archaean from late Archaean
 B) Archaean from Phanerozoic
 C) Proterozoic from Palaeozoic
 D) Archaean from Proterozoic
- 42) Long-term changes in the geochemical cycles are known as
 A) Periodic changes
 B) Perennial changes
 C) Secular changes
 D) Permanent changes
- 43) Most minerals on the Earth's crust belong to this group
 A) Halides
 B) Carbonates
 C) Silicates
 D) Oxides

- 44) The era that covers the longest span of time is:
 A) Proterozoic
 B) Phanerozoic
 C) Precambrian
 D) Palaeozoic
- 45) The upper shell of the earth upto 100km depth is called
 A) Crust
 B) Lithosphere
 C) Biosphere
 D) Asthenosphere
- 46) Which of the following represents the oldest record of metazoan soft bodied animals?
 A) Planktonic Foraminifers
 B) Acritarchs
 C) Ediacaran fauna
 D) Stromatolites
- 47) In which one of the following configurations the electrodes are uniformly spaced?
 A) Schlumberger array
 B) Pole-dipole array
 C) Wenner array
 D) Pole-pole array
- 48) Match the stratigraphic units in Group I with the economic deposits in Group II.
- | Group I | Group II |
|---------------------|-----------------|
| P. Sausar Group | 1. Phosphorite. |
| Q. Bailadilla Group | 2. Pyrite |
| R. Nallamalai Group | 3. BIF |
| S. Udaipur Group | 4. Mn |
| | 5. Pb-Zn |
- A) P-3, Q-4, R-2, S-1
 B) P-4, Q-2, R-1, S-3
 C) P-4, Q-3, R-5, S-1
 D) P-4, Q-2, R-4, S-1
- 49) What is the fundamental unit of lithostratigraphic classification?
 A) Formation
 B) Epoch
 C) Member
 D) Bed
- 50) Polymetallic nodules on the ocean floor contain significant amounts of?
 A) U-Th-Nb
 B) Pb-Zn-Ti
 C) Hg-Mo-Pt
 D) Cu-Ni-Co

Rough Work: