

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
Earth Science (22/26)

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
Earth Science (22/26)

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

- 01) Bad-land Topography is the product of the combined action of
A) Wind and Glacier
B) Wind and Water
C) Water and Glacier
D) Water and Temperature
- 02) Find out the sequence of vegetation zones from equator to pole.
A) Taiga, Tundra, Selva, Savanna
B) Selva, Savanna, Taiga, Tundra
C) Savanna, Taiga, Selva, Tundra
D) Tundra, Taiga, Savanna, Selva
- 03) The normal cycle of erosion is associated with
A) Marine Erosion
B) Wind Erosion
C) River Erosion
D) Glacial Erosion
- 04) Which of the following statements are correct? Select the answer from the codes given below:
i. The soils of the Indian plateau are transported ones.
ii. Rivers have cut alluvial terraces in the Himalayas.
iii. Red soils occur in Tamil Nadu, South Karnataka plateau and Kerala.
iv. Petroleum is the major source of commercial energy in India
Codes:
A) (i) and (iii)
B) (i) to (iv)
C) (ii) and (iii)
D) (ii) and (iv)
- 05) Which one of the following pairs is not correctly matched?
A) Autotrophs: Take energy from inorganic sources and fix it into energy rich organic compound
B) Heterotrophs: Obtain their energy from living organism
C) Herbivores: Organisms that consume plants and animals
D) Detrivores: Obtain their energy from dead organism
- 06) The oldest rocks in India are reported from
A) Siwalik range
B) Aravali range
C) Dharwar region
D) Vindhyan range
- 07) Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R):
Assertion (A): The eastern coast of India is affected by tropical cyclones more than the western coast.
Reason (R): Tropical cyclone originates only in the Bay of Bengal.
In the context of the above two statements, which one of the following is correct?
A) Both (A) and (R) are correct but (R) does not explain (A).
B) Both (A) and (R) are correct and (R) explains (A).
C) (A) is correct but (R) is false.
D) (A) is false but (R) is correct.
- 08) Which one of the following is a Taiga Biome?
A) Sub-Tropical Biome
B) Sub-Arctic Biome
C) Savannah Biome
D) Sub-Sahara Biome
- 09) Which one of the following states receives the highest rainfall during winter months?
A) Punjab
B) Kerala
C) Meghalaya
D) Tamil Nadu
- 10) The concept of differential heating was primarily given to explain which of the following geographical phenomena in India?
A) Jet Stream
B) Cyclones
C) Monsoon
D) Dust Storms
- 11) Tropical cyclone, drought, and wildfire are:
A) Meteorological hazard
B) Man induced hazard
C) Industrial hazard
D) Hydrological hazard
- 12) Earthquakes occur most frequently at
A) Plate surface
B) Plate boundaries
C) Plate vacuum
D) Ocean bed
- 13) The concept of Padiplain is associated with:
A) L.C. King
B) W.M. Davis
C) W. Penck
D) C.A. Cotton

- 14) Which among the following source of energy causes environmental pollution?
 A) Biomass
 B) Solar energy
 C) Coal
 D) Wind
- 15) Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R). Select your answer from the codes given below:
Assertion (A): Laterite soils are well developed in Kerala.
Reason (R): Kerala receives high rainfall during monsoon season.
Codes:
 A) (A) and (R) are correct and (R) explains (A).
 B) (A) is correct, but (R) is false.
 C) (A) is false, but (R) is correct.
 D) (A) and (R) are correct, but (R) does not explain (A).
- 16) What is a cloudburst?
 A) It is caused by rapid condensation of very high clouds
 B) It refers to a thunderstorm with little rain.
 C) It refers to sudden and heavy rainfall over a small area which often lasts for only a few minutes
 D) It refers to 50mm rain over a period of time
- 17) The most common way for air to be cooled in order that a cloud may form is by
 A) Emitting radiation
 B) Rising and expanding
 C) Sinking and contracting
 D) Reflecting radiation
- 18) This ecological factor is the strongest determinant of different biomes
 A) Wind and soil
 B) Precipitation and temperature
 C) Wind and light
 D) Humidity and Ph
- 19) What is the primary cause of the overall rising trend in CO₂ in the atmosphere?
 A) The increase in CO₂ is caused by burning of fossil fuels
 B) CO₂ is increasing because we are coming out of an ice age
 C) As human population grows, people exhale more CO₂
 D) CO₂ is released by the oceans as they warm
- 20) Carbon Sequestration is _____
 A) Removal of CO₂ from the atmosphere
 B) Storage of CO₂ by depositing in reservoir
 C) Removal of CO₂ from the atmosphere & Storing it by depositing in reservoir
 D) Adding CO₂ in atmosphere
- 21) Which among the following gas is used as reference to calculate “Global Warming Potential (GWP)”.
 A) Methane
 B) Carbon Dioxide
 C) Ozone
 D) Nitrogen Dioxide
- 22) Which of the following facts is incorrect?
 A) Global warming is the rise in the average temperature of the earth’s climate system
 B) Eutrophication is observed in water bodies
 C) The greenhouse effect is a natural phenomenon
 D) Ozone is harmless to breathe
- 23) Gas produced by paddy fields and involved in global warming is
 A) Chlorine
 B) Methane
 C) CO₂
 D) H₂S
- 24) In India, Jhum cultivation is practised in
 A) North-East states
 B) South–West coast
 C) South-East coast
 D) Gangetic plain
- 25) Jim Corbett National Park was established in
 A) Uttar Pradesh
 B) Tamil Nadu
 C) Gujarat
 D) Uttarkhand
- 26) The Paleo-Tethys Sea once separated
 A) North and South America
 B) South America and Africa
 C) Europe and Asia
 D) Laurasia and Gondwanaland
- 27) Andean-type mountain belts form in
 A) Island arcs
 B) Continental arcs
 C) Continental collision zones
 D) Continental rift zones
- 28) Compressional wave velocity is the highest in
 A) Granite
 B) Dunite
 C) Syenite
 D) Gabbro

- 29) Which one of the following is in the increasing order of bathymetry?
- Continental slope – continental shelf - continental rise
 - Continental shelf – continental rise – continental slope
 - Continental rise – continental slope – continental shelf
 - Continental shelf – continental slope – continental rise
- 30) Which of the following currents of the Indian Ocean is NOT a seasonal current?
- West India coastal current
 - East India coastal current
 - South equatorial current
 - North equatorial current
- 31) Choose the FALSE statement amongst the following:
- During the Indian summer monsoon, the heaviest rainfall zone is along the monsoon trough axis.
 - During the northeast monsoon, maximum rain fall over India is over Tamil Nadu
 - Norwesters occur in the pre-monsoon months
 - Tropical Easterly Jet is observed over South India during summer monsoon months
- 32) The maximum amount of water vapour which air can hold depends on
- Dew point temperature
 - Humidity
 - Air temperature
 - Evaporation
- 33) Pollution in Delhi is more in winter mainly because
- More vehicles ply in winter
 - Atmospheric inversion layer prevents dispersion of pollutants
 - Winds from the west bring more pollutants
 - Firewood is burnt for heating
- 34) In which of the following conditions relative sea level rises?
- Eustatic sea level is rising and basin floor is uplifting at a faster rate
 - Eustatic sea level is falling and basin floor is subsiding at a faster rate
 - Eustatic sea level is falling and basin floor is stationary
 - Eustatic sea level is stationary and basin floor is uplifting
- 35) Considering the geographical area, the albedo will significantly increase due to the following change in land use/cover
- Temperate forest to grassland
 - Tropical forest to Savannah
 - Savannah to desert
 - Temperate forest to tropical forest
- 36) Which of the following layers of the Earth dominantly accounts for its magnetic field?
- Inner core
 - Outer core
 - Mantle
 - Crust
- 37) The estimated age of the universe is
- 4.56 billion years
 - 13.5 billion years
 - 10.1 billion years
 - 25.7 billion years
- 38) Which of the following rocks is not expected to occur on the moon?
- Anorthosite
 - Norite
 - Sandstone
 - Basalt
- 39) Which one of the following contributes most to the heat budget of Earth's surface?
- Radioactive heat from rocks
 - Internal heat of the Earth reaching the surface by conduction
 - Volcanic eruption
 - Solar radiation
- 40) In the Himalayan Mountain Belt, rocks are deformed. Most common deformational structures observed in this region are
- Normal faults and tensional fractures
 - Folds and reverse faults
 - Bending folds and strike-slip faults
 - Vertical fractures and extensional folds
- 41) Which of the following countries is situated on a divergent plate boundary?
- Greenland
 - Indonesia
 - Japan
 - Iceland
- 42) The magnitude of an earthquake is determined from
- The epicentral distance and focal depth
 - Arrival times of seismic waves at the observatories
 - Magnitude of destruction to life and property
 - Amplitude of horizontal ground motion

- 43) Sustainable development means
- A) Preserving the environment undisturbed
 - B) Reducing developmental activities to a minimum
 - C) Planting more trees for future generations
 - D) Optimising the trade-off between development and environmental degradation
- 44) Which of the following is NOT a dominantly inter-annual phenomenon?
- A) ENSO
 - B) Indian Summer monsoon
 - C) Madden-Julian Oscillation
 - D) Indian Ocean Dipole
- 45) How does El Nino influence atmospheric CO2 levels?
- A) CO2 decreases due to increase in primary production
 - B) CO2 decreases due to weakening of equatorial upwelling
 - C) CO2 increases due to increase in the mixing of the upper ocean
 - D) CO2 increases due to the increase in heterotrophic respiration
- 46) In which portion of a meandering river channel are the coarsest sediments deposited?
- A) Crevasse splay
 - B) Natural levee
 - C) Channel thalweg
 - D) Channel margin
- 47) Compared to the Earth, Jupiter orbits around the Sun much slower because of its
- A) Lower density
 - B) Higher mass
 - C) Larger distance from the Sun
 - D) Slower rotation about its axis
- 48) Tsunamis are most likely to be generated when Richter scale magnitudes of earthquakes are
- A) > 8 under oceans
 - B) > 8 under continents
 - C) > 8 either under oceans or continents
 - D) < 8 either under oceans or continents
- 49) Ekman transport occurs in the
- A) Upper ocean
 - B) Meso-pelagic layer
 - C) Bathy-pelagic layer
 - D) Ocean bottom.

- 50) Which of the following oceans/seas is decreasing in its total area for the past few million years?
- A) Atlantic Ocean
 - B) Pacific Ocean
 - C) Red Sea
 - D) Indian Ocean

Rough Work: