

THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA, VADODARA

Ph. D. ENTRANCE TEST (PET) 2023

Signature of Invigilator

Paper - II
Earth Science

Roll.
No.

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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) (B) (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

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

- 01) Coriolis force leads to wind deflection towards _____ direction in the northern hemisphere.
A) Right
B) Left
C) North-east
D) South-west
- 02) 'Mohorovicic discontinuity' marks the boundary between:
A) Continental shelf and Ocean crust
B) Asthenosphere and lithosphere
C) Crust and the upper mantle
D) Core and the mantle
- 03) In May-June each year, the monsoon winds approach the southern tip of India from
A) Northly direction
B) North-easterly direction
C) North-westerly direction
D) South-westerly direction
- 04) The direction of a horizontal line on an inclined rock strata is known as :
A) Anticline
B) Dip
C) Strike
D) Syncline
- 05) Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R). Select your answer from the code given below :
Assertion (A): There is close relationship between volcanic activities and plate margins.
Reason (R) : A vast majority of the world's volcanoes are associated with the convergent plate margins.
Code :
A) Both (A) and (R) are true and (R) is the correct explanation of (A).
B) Both (A) and (R) are true, but (R) is not a correct explanation of (A).
C) (A) is true, but (R) is false.
D) (A) is false, but (R) is true.
- 06) Which one of the following is the correct sequence of surface components of pressure and wind from the equator to the poles?
A) Polar easterlies, Westerlies, Subtropical highs, Trade winds
B) Subtropical highs, Westerlies, Trade winds, Polar easterlies
C) Trade winds, Polar easterlies, Westerlies, Subtropical highs
D) Trade winds, Subtropical highs, Westerlies, Polar easterlies
- 07) Which one of the following terms is appropriate for plants that endure seasonal climatic fluctuations from year to year?
A) Perennials
B) Annuals
C) Seasonal
D) Bi-annuals
- 08) Which of the following is formed as a result of tectonic forces?
A) Hanging valley
B) V-shaped valley
C) Rift valley
D) Blind valley
- 09) What causes ocean acidification?
A) CO₂ dissolved in ocean water
B) Sunscreen in the water
C) Ocean pollution
D) Warm water
- 10) Global warming is observed century-scale rise in the _____ of the Earth's climate system.
A) Maximum temperature
B) Minimum temperature
C) Average temperature
D) Temperature
- 11) If CO₂ in the earth's atmosphere disappears, the earth's surface would
A) Increase
B) Decrease
C) Depend on oxygen concentration
D) Remain the same
- 12) Cleaning Environment with biological options such as microbes and plants are called
A) Bioremediation
B) Biotechnology
C) Biowarfare
D) Incineration
- 13) Ozone layer is formed in which zone of the atmosphere
A) Mesosphere
B) Stratosphere
C) Troposphere
D) Ionosphere
- 14) First national park in India
A) Bandipur National park
B) Gir National park
C) Sunderbans National park
D) Jim Corbet National park

- 15) _____ plants are rich in hydrocarbons which are used in diesel engine
 A) Sorghum,
 B) Sugarcane
 C) Cactus
 D) *Jatropha curcas* and oil palms
- 16) Which one of the following is the example of plantation agriculture?
 A) Jute
 B) Wheat
 C) Tea
 D) Oilseeds
- 17) Which one of the following latitudes is known as the 'Calms of Cancer'?
 A) 66.5 Degree South
 B) 66. 5 Degree North
 C) 25 Degree North
 D) 25 Degree South
- 18) Which of the following earthquake waves are most destructive?
 A) S-waves
 B) P-waves
 C) R-waves
 D) L-waves
- 19) Which among the following has postulated the Subsidence Theory related to coral reef?
 A) Dally
 B) Agassiz
 C) Darwin
 D) Davis
- 20) Acid rain is caused by an increase in the concentration of?
 A) SO₂ and NO₂
 B) CO and CO₂
 C) CO and SO₃
 D) O₃ and dust
- 21) The largest soil group in India is of
 A) Red soil
 B) Alluvial soil
 C) Sandy soil
 D) Mountain soil
- 22) Ramsar Convention is associated with
 A) Forest conservation
 B) Soil conservation
 C) Wetland conservation
 D) Wildlife conservation
- 23) "The present in the key to the past." This phrase is related to the concept of:
 A) Isostasy
 B) Diastrophism
 C) Plate tectonics
 D) Uniformitarianism
- 24) Which one of the following sequences is the correct one in a littoral zone from land to sea?
 A) Backshore, Foreshore, Nearshore, Offshore
 B) Foreshore, Backshore, Nearshore, Offshore
 C) Offshore, Nearshore, Foreshore, Backshore
 D) Nearshore, Offshore, Backshore, Foreshore
- 25) 25. Which one of the following groups of natural elements in living matters make up more than 99% of Earth's biomass?
 A) H, O, C
 B) N, Ca, K
 C) H, Ca, N
 D) S, H, Na
- 26) If there is no change in the mean sea level, the submerged coast will
 A) Remain unchanged
 B) Retreat by erosion
 C) Prograde by deposition
 D) Retreat as well as prograde
- 27) It is silent, slow and gradual disaster
 A) Drought
 B) Earthquake
 C) Flood
 D) Tsunami
- 28) For a time difference of two hours, the longitudinal distance will be equal to _____.
 A) 15°
 B) 30°
 C) 45°
 D) 60°
- 29) Which one of the following would have occurred if the earth had not been inclined on its own axis?
 A) All the seasons would have been of same duration
 B) The seasons would not have changed
 C) The summers would have been of longer duration
 D) The winters would have been of longer duration

- 30) The Earth is an oblate spheroid and not a perfect sphere. This is because
- The Earth has a rotational motion and the rotational speed increases as one goes from the Poles towards the Equator.
 - The Equator experiences greater gravitational pull from the Sun.
 - The intensity of sunlight received at the Equator is greater than that at the Poles.
- 1 only
 - 1 and 2
 - 3 only
 - 1, 2 and 3
- 31) Which of these is the longest?
- 0° Meridian
 - 180° E-W
 - 90° E
 - All are equal
- 32) _____ is the time taken by the Earth to return to a given point in its orbit with reference to a fixed star.
- Lunar year
 - Sidereal year
 - Solar year
 - Tropical year
- 33) When rain falls through a cold layer of air near the Earth's surface, raindrops get frozen into ice. This type of precipitation is called
- Hail
 - Snowfall
 - Snowstorm
 - Sleet
- 34) Which among the following soils is considered most suitable for cotton cultivation?
- Red Soil
 - Black Soil
 - Laterite Soil
 - Alluvial Soil
- 35) In the earliest days when life originated on earth, the atmosphere contained _____
- Free oxygen
 - No oxygen
 - Oxygen in fixed form
 - Oxygen bound to carbon
- 36) A Tsunami occurs 1000 km away from the shore in an ocean water depth of 6.25 km. The tsunami reaches the shore in about
- 1 hr
 - 2 hr
 - 4 hr
 - 8 hr
- 37) Choose the major soil orders occurring in the semi-arid tropics
- Vertisols and Mollisols
 - Oxisols and Histosols
 - Alfisols and Vertisols
 - Oxisols and Vertisols
- 38) A star which is burning/fusing mostly Hydrogen is called
- Red giant
 - Main sequence
 - White dwarf
 - Super giant
- 39) At high pressures and temperatures rocks undergo permanent ductile deformation under tectonic stresses. Such permanent strains can develop when the stress in the rocks reaches its
- Yield strength
 - Tensile strength
 - Ultimate strength
 - Failure stress
- 40) Which of the following sets represents mechanical layering of the Earth from the surface to the centre?
- SIAL, SIMA, Mantle, Core
 - Crust, Mantle, Core
 - Lithosphere, Asthenosphere, Lower Mantle, Outer Core, Inner Core
 - Continental Crust, Oceanic Crust, Mantle, Core
- 41) An elevated land mass attaining isostatic compensation
- Is always uplifted
 - Always undergoes subsidence
 - is uplifted in the case of over compensation and undergoes subsidence otherwise
 - Undergoes subsidence in the case of over compensation and is uplifted otherwise
- 42) Which one of the listed minerals is formed during weathering of rocks on the surface of the Earth?
- Quartz
 - Bauxite
 - Feldspar
 - Muscovite
- 43) Which one of the following represents the correct ascending order of appearance in geological history of the Earth?
- Fishes, amphibians, reptiles, mammals
 - Amphibians, reptiles, mammals, fishes
 - Fishes, amphibians, mammals, reptiles
 - Reptiles, mammals, amphibians, fishes

- 44) Which of the following explains best the oceanic conveyor belt?
- A) Zonal transport of salinity across the global ocean
 - B) Meridional transport of salinity across the global ocean
 - C) Zonal transport of heat across the global ocean
 - D) Meridional transport of heat across the global ocean.
- 45) When averaged over the entire globe, decreasing order of surface fluxes is
- A) Latent heat, sensible heat, net long wave
 - B) Sensible heat, latent heat, net long wave
 - C) Net long wave, latent heat, sensible heat
 - D) Latent heat, net long wave, sensible heat
- 46) A river channel widens downstream because the
- A) Sediment load decreases
 - B) Gradient decreases and discharge increases
 - C) Lateral eroding capacity of the river increases and sediment load decreases
 - D) Competence of the river increases
- 47) The relationship between the period of revolution of the planets around the Sun and their distance from the Sun is given by
- A) Bode's Law
 - B) Kepler's Law
 - C) Newton's Law
- 48) During the process of evaporation, ocean experiences
- A) Sensible heat loss
 - B) Latent heat loss
 - C) Sensible heat gain
 - D) Latent heat gain
- 49) In a neutrally stable atmosphere, the lapse rate is
- A) More than dry adiabatic
 - B) Between dry and moist adiabatic
 - C) Negative
 - D) Equal to dry adiabatic
- 50) U-shaped valley is generally associated with _____ action.
- A) Marine
 - B) Fluvial
 - C) Glacial
 - D) Aeolian

Rough Work: