

Roll No.

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(Write Roll Number from left side exactly as in the Admit Card)

Signature of Invigilators

1. \_\_\_\_\_

2. \_\_\_\_\_

**2717**

Question Booklet Series

**X**

PAPER-II

Question Booklet No.

(Identical with OMR Answer Sheet Number)

Subject Code : 27

## EARTH ATMOSPHERIC OCEAN & PLANETARY SCIENCES

Time : 1 Hour 15 Minutes

Maximum Marks: 100

### Instructions for the Candidates

- Write your Roll Number in the space provided on the top of this page as well as on the OMR Sheet provided.
- At the commencement of the examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and verify it:
  - To have access to the Question Booklet, tear off the paper seal on the edge of this cover page.
  - Faulty booklet, if detected, should be get replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.
  - Verify whether the Question Booklet No. is identical with OMR Answer Sheet No.; if not, the full set to be replaced.
  - After this verification is over, the Question Booklet Series and Question Booklet Number should be entered on the OMR Sheet.
- This paper consists of fifty (50) multiple-choice type questions. All the questions are compulsory. Each question carries *two* marks.
- Each Question has four alternative responses marked: (A) (B) (C) (D). You have to darken the circle as indicated below on the correct response against each question.

*Example:* (A) (B) (●) (D), where (C) is the correct response.
- Your responses to the questions are to be indicated correctly in the OMR Sheet. If you mark your response at any place other than in the circle in the OMR Sheet, it will not be evaluated.
- Rough work is to be done at the end of this booklet.
- If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Sheet, except 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.
- Do not tamper or fold the OMR Sheet in any way. If you do so, your OMR Sheet will not be evaluated.
- You have to return the Original OMR 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 question booklet and duplicate copy of OMR Sheet after completion of examination.
- Use only Black Ball point pen.**
- Use of any calculator or mobile phone etc. is strictly prohibited.**
- There are no negative marks for incorrect answers.**

[Please Turn Over]



## EARTH ATMOSPHERIC OCEAN &amp; PLANETARY SCIENCES

## PAPER II

1. Heavy winter precipitation in NW Himalaya is caused by
  - (A) Indian Summer Monsoon
  - (B) Western Disturbances
  - (C) Northeastern Monsoon
  - (D) El Nino Southern Oscillation
  
2. Olivine-spinel phase transition in mantle
  - (A) involves increase in density with an exothermic reaction.
  - (B) involves no volume change and the reaction is endothermic.
  - (C) involves an endothermic reaction and decrease in volume.
  - (D) involves no exothermic or endothermic reaction.
  
3. The average density of the Earth is 5.5 gm/cc. Since the density of rocks in the crust averages about 2.2 gm/cc, we may infer that
  - (A) the outer core is molten.
  - (B) the density must increase to a maximum of 5.5 gm/cc with depth.
  - (C) the density of the core must be much greater than 5.5 gm/cc.
  - (D) the mantle is composed of heavy silicates.
  
4. The water trapped during the formation of sedimentary rocks is termed as
  - (A) Connate water
  - (B) Juvenile water
  - (C) Meteoric water
  - (D) Vadose water
  
5. The size of silt in the Wentworth scale ranges between
  - (A)  $2-\frac{1}{8}$  mm
  - (B)  $2-\frac{1}{16}$  mm
  - (C)  $2-\frac{1}{8}$  cm
  - (D)  $2-\frac{1}{16}$  cm
  
6. The hardest oxide mineral is
  - (A) Magnetite
  - (B) Hematite
  - (C) Corundum
  - (D) Rutile
  
7. The axial tilt of the earth is
  - (A)  $24.5^\circ$
  - (B)  $12.7^\circ$
  - (C)  $23.5^\circ$
  - (D)  $17.5^\circ$
  
8. Pyrite is also called as
  - (A) Pure gold
  - (B) Impure gold
  - (C) Fool's gold
  - (D) Artificial gold

9. An earthquake of magnitude 8 will release \_\_\_\_\_ times more energy than the one of magnitude 6.
- (A) 31.6
  - (B) 63.2
  - (C) 632
  - (D) 998.6
10. The division between the zone of aeration and the zone of saturation is called the
- (A) Interstitial zone.
  - (B) Capillary fringe zone.
  - (C) Water table.
  - (D) Belt of soil moisture.
11. Which of the following materials has the highest porosity?
- (A) Sandstone
  - (B) Clay
  - (C) Silt
  - (D) Gravel
12. The D'' layer refers to
- (A) the super 100 km thick layer in the upper mantle.
  - (B) liquid outer core.
  - (C) solid inner core.
  - (D) the ~ 200 km thick layer of the lower mantle directly above the core-mantle boundary.
13. Which of the following is not a green house gas?
- (A) CO
  - (B) CO<sub>2</sub>
  - (C) N<sub>2</sub>
  - (D) CFC
14. \_\_\_\_\_ strengthened by strong storms are capable of transporting foreshore sediments up to deeper parts of the foreshore zone.
- (A) Longshore currents
  - (B) Flood-currents
  - (C) Ebb-currents
  - (D) Geostrophic currents
15. Shadow zone for direct P-wave arrival takes place between
- (A) 103° to 163°
  - (B) 153° to 173°
  - (C) 103° to 143°
  - (D) 73° to 103°
16. Syngenetic deposits are formed
- (A) before the formation of host rocks.
  - (B) after the formation of host rocks.
  - (C) at the time of formation of host rock.
  - (D) All of the above
17. Deccan Trap volcanism is believed to be product of
- (A) intraplate volcanism.
  - (B) result of collision between two continental micro plates.
  - (C) result of collision between two oceanic micro plates.
  - (D) magmatism in continental margin.
18. Organo-sedimentary structure is also called as
- (A) Stromatolites
  - (B) Ripple marks
  - (C) Mud cracks
  - (D) Laminated

19. There are no occurrences of \_\_\_\_\_ hazards in the Himalaya.

- (A) earthquake
- (B) landslide
- (C) flood
- (D) volcanic

20. For radioactive isotope dating of an Archean deformed amphibolite, you would prefer to use

- (A)  $C^{14}$  method
- (B) K–Ar method
- (C) Rb–Sr method
- (D) Sm–Nd method

21. 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 through it.
- (C) L waves are not transmitted through it.
- (D) Information from meteorites suggests this.

22. Which of the following formations does not contain coal?

- (A) Barakar
- (B) Raniganj
- (C) Barren Measures
- (D) Karharbari

23. In an area, steeply dipping strata is overlain by a horizontal-bedded strata. The contact between these two marks a/an \_\_\_\_\_.

- (A) joint
- (B) normal fault
- (C) reverse fault
- (D) unconformity

24. Essential minerals in basalts are

- (A) olivine and pyroxene.
- (B) Ca-plagioclase and pyroxene.
- (C) plagioclase, K-feldspar and quartz.
- (D) plagioclase and quartz.

25. The concept of metamorphic zones was first developed by

- (A) Billings
- (B) Turner
- (C) Harker
- (D) Barrow

26. Blue muds are mostly present in

- (A) Continental shelf
- (B) Continental slope
- (C) Littoral zone
- (D) Abyssal plain

27. Which of the following sedimentary structure can be used to infer top and bottom of the strata?

- (A) Graded bedding
- (B) Planar cross-bedding
- (C) Trough cross-bedding
- (D) Lenticular bedding

28. In India 'Porphyry' copper deposit is found to occur at

- (A) Khetri
- (B) Calc zone of Pithoragarh
- (C) Malanjkhand
- (D) Zawar

29. Which of the following groups of minerals are polymorphs?
- (A) Calcite – Aragonite
  - (B) Calcite – Dolomite
  - (C) Calcite – Siderite
  - (D) Calcite – Marcasite
30. Gravity fault refers
- (A) to an inclined fault where the hanging wall side has gone up relative to the footwall.
  - (B) to a vertical fault.
  - (C) an inclined fault where the hanging wall side has gone down relative to the footwall.
  - (D) a fault where the net slip is parallel to the strike of the fault.
31. While working in Deccan Trap region, for correlation purpose, you will prefer to use
- (A) Lower vesicular zone
  - (B) Upper vesicular zone
  - (C) Intertrappean bed
  - (D) Entablature zone
32. Sukindha complex is famous for
- (A) Manganese deposit
  - (B) Chromite deposit
  - (C) Copper deposit
  - (D) Gold deposit
33. \_\_\_\_\_ are the fastest seismic waves.
- (A) P-waves
  - (B) S-waves
  - (C) Rayleigh waves
  - (D) Love waves
34. What is the maximum depth of occurrence of earthquake?
- (A) 100 km
  - (B) 400 km
  - (C) 700 km
  - (D) 1000 km
35. Karst topography mostly develops on
- (A) granitic rocks
  - (B) carbonate rocks
  - (C) basaltic rocks
  - (D) sandstone
36. In which part of the Earth's atmosphere, ozone layer is mostly located?
- (A) Upper part of Exosphere
  - (B) Middle part of Thermosphere
  - (C) Lower part of Mesosphere
  - (D) Lower part of Stratosphere
37. Elastic rebound theory helps to explain the cause of
- (A) flexure folding
  - (B) joint
  - (C) unconformity
  - (D) earthquake
38. The sequence of depth zones of ocean from land towards open sea is
- (A) Littoral—Neritic—Abyssal—Bathyal
  - (B) Littoral—Neritic—Bathyal—Abyssal
  - (C) Neritic—Bathyal—Littoral—Abyssal
  - (D) Neritic—Littoral—Abyssal—Bathyal
39. The average amount of dissolved salt per 1000 gm of sea water is about
- (A) 10 gm
  - (B) 35 gm
  - (C) 200 gm
  - (D) 600 gm
40. The average thickness of the lithosphere is \_\_\_\_\_.
- (A) 60 km
  - (B) 100 km
  - (C) 150 km
  - (D) 200 km

41. Banded Hematite Jasper (BHJ) is an example of:  
(A) clastic sediments.  
(B) non-clastic sediments.  
(C) meteoritic impact.  
(D) both clastic and non-clastic sediments.
42. A Tsunami is best classified according to its behaviour as  
(A) a shallow water wave.  
(B) a deep water wave.  
(C) an intermediate water wave.  
(D) an earthquake wave.
43. The property that tends to increase as one travels from the pole to the equator is  
(A) Tangential velocity  
(B) Gravitational attraction  
(C) Angular velocity  
(D) Weight
44. Volume wise which of the following is the dominant gas in atmosphere?  
(A) Oxygen  
(B) Nitrogen  
(C) Carbon dioxide  
(D) Hydrogen
45. Which of the following planets has the densest atmosphere?  
(A) Mercury  
(B) Venus  
(C) Earth  
(D) Mars
46. Environmental changes aid evolution in that they lead to  
(A) mutations.  
(B) natural selection.  
(C) origin of the species.  
(D) retreat of the seas.
47. The strike slip fault is one in which the net slip  
(A) is parallel to the strike of the adjacent strata.  
(B) is along the strike of the fault plane.  
(C) contains both large vertical and horizontal components.  
(D) follows regional fold axis.
48. 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.
49. Which one of the following minerals is a sulphide?  
(A) Gypsum  
(B) Corundum  
(C) Baryte  
(D) Stibnite
50. The sequential layers of atmosphere from the surface of the earth in upward direction is  
(A) Thermosphere—Mesosphere—Stratosphere—Troposphere  
(B) Mesosphere—Troposphere—Thermosphere—Stratosphere  
(C) Troposphere—Mesosphere—Stratosphere—Thermosphere  
(D) Troposphere—Stratosphere—Mesosphere—Thermosphere
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*2717-II*

X-8

**ROUGH WORK**