

Test Booklet Code & Serial No.

प्रश्नपत्रिका कोड व क्रमांक

B

Paper-III

# EARTH, ATMOSPHERIC, OCEAN & PLANETARY SCIENCE

Signature and Name of Invigilator

Seat No.

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1. (Signature) .....

(In figures as in Admit Card)

(Name) .....

Seat No. ....

(In words)

2. (Signature) .....

(Name) .....

OMR Sheet No.

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(To be filled by the Candidate)

JAN - 35318

Time Allowed : 2½ Hours]

[Maximum Marks : 150

Number of Pages in this Booklet : 20

Number of Questions in this Booklet : 75

## Instructions for the Candidates

- Write your Seat No. and OMR Sheet No. in the space provided on the top of this page.
- This paper consists of 75 objective type questions. Each question will carry two marks. All questions of Paper-III will be compulsory, covering entire syllabus (including all electives, without options).
- At the commencement of examination, the question booklet will be given to the student. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as follows :
  - To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal or open booklet.
  - Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to missing pages/questions or questions repeated or not in serial order or any other discrepancy should not be accepted and correct booklet should be obtained from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given. The same may please be noted.**
  - After this verification is over, the OMR Sheet Number should be entered on this Test Booklet.
- Each question has four alternative responses marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item.  
**Example :** where (C) is the correct response.  

(A)	(B)	(C)	(D)
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- Your responses to the items are to be indicated in the **OMR Sheet given inside the Booklet only**. If you mark at any place other than in the circle in the OMR Sheet, it will not be evaluated.
- Read instructions given inside carefully.
- Rough Work is to be done at the end of this booklet.
- If you write your Name, Seat Number, Phone Number or put any mark on any part of the OMR 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, you will render yourself liable to disqualification.
- You have to return 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 the Test Booklet and duplicate copy of OMR Sheet on conclusion of examination.
- Use only Blue/Black Ball point pen.**
- Use of any calculator or log table, etc., is prohibited.**
- There is no negative marking for incorrect answers.**

## विद्यार्थ्यांसाठी महत्त्वाच्या सूचना

- परिक्षार्थींनी आपला आसन क्रमांक या पृष्ठावरील वरच्या कोपऱ्यात लिहावा. तसेच आपणांस दिलेल्या उत्तरपत्रिकेचा क्रमांक त्याखाली लिहावा.
- सदर प्रश्नपत्रिकेत 75 बहुपर्यायी प्रश्न आहेत. प्रत्येक प्रश्नास दोन गुण आहेत. या प्रश्नपत्रिकेतील सर्व प्रश्न सोडविणे अनिवार्य आहे. सदरचे प्रश्न हे या विषयाच्या संपूर्ण अभ्यासक्रमावर आधारित आहेत.
- परीक्षा सुरु झाल्यावर विद्यार्थ्यांला प्रश्नपत्रिका दिली जाईल. सुरुवातीच्या 5 मिनीटांमध्ये आपण सदर प्रश्नपत्रिका उघडून खालील बाबी अवश्य तपासून घ्याव्यात.
  - प्रश्नपत्रिका उघडण्यासाठी प्रश्नपत्रिकेवर लावलेले सील उघडावे. सील नसलेली किंवा सील उघडलेली प्रश्नपत्रिका स्विकारू नये.
  - पहिल्या पृष्ठावर नमूद केल्याप्रमाणे प्रश्नपत्रिकेची एकूण पृष्ठे तसेच प्रश्नपत्रिकेतील एकूण प्रश्नांची संख्या पडताळून घ्यावी. पृष्ठे कमी असलेली/कमी प्रश्न असलेली/प्रश्नांचा चूकीचा क्रम असलेली किंवा इतर त्रुटी असलेली सदोष प्रश्नपत्रिका सुरुवातीच्या 5 मिनिटातच पर्यवेक्षकाला परत देऊन दुसरी प्रश्नपत्रिका मागवून घ्यावी. त्यानंतर प्रश्नपत्रिका बदलून मिळणार नाही तसेच वेळही वाढवून मिळणार नाही याची कृपया विद्यार्थ्यांनी नोंद घ्यावी.
  - वरीलप्रमाणे सर्व पडताळून पहिल्यानंतरच प्रश्नपत्रिकेवर ओ.एम.आर. उत्तरपत्रिकेचा नंबर लिहावा.
- प्रत्येक प्रश्नासाठी (A), (B), (C) आणि (D) अशी चार विकल्प उत्तरे दिली आहेत. त्यातील योग्य उत्तराचा रकाना खाली दर्शविल्याप्रमाणे ठळकपणे काळा/निळा करावा.  
**उदा. :** जर (C) हे योग्य उत्तर असेल तर.  

(A)	(B)	(C)	(D)
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- या प्रश्नपत्रिकेतील प्रश्नांची उत्तरे ओ.एम.आर. उत्तरपत्रिकेतच दर्शवावीत. इतर ठिकाणी लिहिलेली उत्तरे तपासली जाणार नाहीत.
- आत दिलेल्या सूचना काळजीपूर्वक वाचाव्यात.
- प्रश्नपत्रिकेच्या शेवटी जोडलेल्या कोऱ्या पानावरच कच्चे काम करावे.
- जर आपण ओ.एम.आर. वर नमूद केलेल्या ठिकाणा व्यतिरिक्त इतर कोठेही नाव, आसन क्रमांक, फोन नंबर किंवा ओळख पटेल अशी कोणतीही खूप केलेली आढळून आल्यास अथवा असभ्य भाषेचा वापर किंवा इतर गैरमागाचा अवलंब केल्यास विद्यार्थ्यांला परीक्षेस अपात्र ठरविण्यात येईल.
- परीक्षा संपल्यानंतर विद्यार्थ्यांने मूळ ओ.एम.आर. उत्तरपत्रिका पर्यवेक्षकांकडे परत करणे आवश्यक आहे. तथापी, प्रश्नपत्रिका व ओ.एम.आर. उत्तरपत्रिकेची द्वितीय प्रत आपल्याबरोबर नेण्यास विद्यार्थ्यांना परवानगी आहे.
- फक्त निळा किंवा काळा बॉल पेनचाच वापर करावा.**
- कॅलक्युलेटर किंवा लॉग टेबल वापरण्यास परवानगी नाही.**
- चुकीच्या उत्तरासाठी गुण कपात केली जाणार नाही.**

**JAN - 35318/III—B**

## Earth, Atmospheric, Ocean and Planetary Science Paper III

Time Allowed : 2½ Hours]

[Maximum Marks : 150

**Note** : This paper contains **Seventy Five (75)** multiple choice questions, each question carrying **Two (2)** marks. Attempt *All* questions.

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|--|---|
| <p>1. Metaluminous granites that are typically magnetite bearing and inferred to be produced by differentiation of andesite or partial melting of an igneous source are designed as :</p> <p>(A) M-type granites<br/>(B) A-type granites<br/>(C) I-type granites<br/>(D) S-type granites</p> <p>2. Elements that form ions with higher charge than the +2 found for the <math>Mg^{+2}</math>, <math>Fe^{+2}</math> and <math>Ca^{+2}</math> present in the octahedral sites in mafic and ultramafic rock forming minerals and are larger in size than the tetrahedral <math>Si^{4+}</math> and <math>Al^{3+}</math> sites in silicate minerals are termed as :</p> <p>(A) high field strength elements<br/>(B) Large ion lithophile elements<br/>(C) Transition metals<br/>(D) Heavy Rare Earth elements</p> | <p>3. Which of the following is <i>not</i> true for Reunion and Kilanea volcanoes</p> <p>(A) Reunion volcano and Kilanea volcano are indicative of mantle plumes<br/>(B) Both are located on respective mid-oceanic ridges<br/>(C) Both are active volcanoes<br/>(D) Both have basic magnetism associated with them</p> <p>4. Which one of the following is the oldest thrust of Himalaya ?</p> <p>(A) Main Boundary Thrust<br/>(B) Main Central Thrust<br/>(C) Himalayan Frontal Thrust<br/>(D) Main Boundary Fault</p> <p>5. Larger parallel shortening during folding results in :</p> <p>(A) Convolute folds<br/>(B) Buckling<br/>(C) Fracturing<br/>(D) Flow folding</p> |
|--|---|

6. Hercynian Orogeny has taken place during the late :
- (A) Carboniferous
  - (B) Cambrian
  - (C) Devonian
  - (D) Precambrian
7. .... are the areas of deposition within a meandering stream channel producing ridge-and-swale topography at the surface.
- (A) Crevasse-splay
  - (B) Levees
  - (C) Point bar
  - (D) Alluvial fans
8. A normal curve in sediment size analysis is defined in term of the Mean and the .....
- (A) Mode
  - (B) Skewness
  - (C) Standard deviation
  - (D) Kurtosis
9. Trilobites are the index fossils of :
- (A) Palaeozoic
  - (B) Mesozoic
  - (C) Cenozoic
  - (D) Precambrian
10. Physa belongs to class :
- (A) Gastropoda
  - (B) Cephalopoda
  - (C) Echinoidea
  - (D) Articulata

11. What is the name of an erosional surface that separates two sets of sedimentary layers with non-parallel planes ?
- (A) Cross-bedding  
 (B) formation  
 (C) Non-conformity  
 (D) Angular unconformity
12. In Bouguer gravity anomaly map, which of the following statements are/is *correct*. Select appropriate answer :
- (A) Long wavelength anomalies suggest deep level density contrast and help in understanding large-scale or regional structures of the Earth's crust  
 (B) Short wavelength anomalies are due to density contrast at shallower levels and are useful in understanding shallower structures and in exploration.  
 (C) Geological knowledge of the area is essential in understanding the residual anomalies in the given area.  
 (D) All of the above are correct.
13. In gravity surveys the readings are function of :
- (A) Rigidity of the rocks  
 (B) Bulk's modulus of the rocks  
 (C) Density and mass of the rocks  
 (D) Hardness and specific gravity of rocks
14. Which of the following is a *correct* statement :
- (A) Seismic energy attenuation is directly proportional to square of the distance from focus.  
 (B) Seismic energy attenuation is inversely proportional to square root of the distance from focus.  
 (C) Seismic energy attenuation is directly proportional to square root of the distance from focus.  
 (D) Seismic energy attenuation is directly proportional to distance from focus.

15. The current geomagnetic polarity is named as :
- (A) Matuyama Normal
  - (B) Gauss Normal
  - (C) Gilbert Reversal
  - (D) Brunhes Normal
16. One Darcy equals the unit :
- (A)  $0.98 \times 10^{-12} \text{ m}^2$
  - (B)  $2.3 \times 10^{-15} \text{ m}^2$
  - (C)  $5 \times 10^2 \text{ m}$
  - (D)  $3 \times 10^{-3} \text{ km}$
17. The variety of coal, that is brown in colour, with roughly 70% carbon and considerable moisture and volatile content is known as :
- (A) Lignite
  - (B) Peat
  - (C) Subbituminous
  - (D) Anthracite
18. The water occurring in a rock formation entrapped during the deposition of the rock is called :
- (A) Meteoric water
  - (B) Juvenile water
  - (C) Connate water
  - (D) Pellicular water
19. The potential of the electrosphere (ionosphere) is positive with respect the Earth and its magnitude is about :
- (A) 1000 kV
  - (B) 2000 kV
  - (C) 300 kV
  - (D) 10 kV
20. An electrified region of the upper atmosphere where fairly large concentrations of ions and free electrons exist is :
- (A) Troposphere
  - (B) Stratosphere
  - (C) Ionosphere
  - (D) Bio-sphere

21. Earth's average albedo is about :
- (A) 50%
  - (B) 70%
  - (C) 90%
  - (D) 30%
22. In atmospheric models, space-and time-dependent processes are described by :
- (A) Ordinary differential equations
  - (B) Empirical equations
  - (C) Statistical equations
  - (D) Partial differential equations
23. A low pressure system is said to be a cyclonic storm if the wind speed exceeds :
- (A) 17 knots
  - (B) 24 knots
  - (C) 27 knots
  - (D) 33 knots
24. If the wavelength of electromagnetic radiation emitted by a body is 9.6  $\mu\text{m}$ , the temperature of the body in Kelvin will be :
- (A) 301.77
  - (B) 264.45
  - (C) 560.48
  - (D) 320.7
25. The Clausius-Clapeyron equation explains the Variation of :
- (A) Equilibrium vapor pressure of water with its specific volume.
  - (B) Specific volume of water with temperature
  - (C) Latent heat of phase change of water with temperature
  - (D) Equilibrium vapor pressure of water with temperature
26. Which among the following is *correct* for a tropical cyclone ?
- (A) Horizontal pressure gradient is larger than vertical pressure gradient
  - (B) Vertical pressure gradient is larger than horizontal pressure gradient
  - (C) Both are nearly equal
  - (D) Vertical pressure gradient is zero

27. The vertical component of relative vorticity is given by :

(A)  $Y = \frac{\delta u}{\delta x} + \frac{\delta v}{\delta y}$

(B)  $Y = \frac{\delta v}{\delta x} - \frac{\delta u}{\delta y}$

(C)  $Y = \frac{\delta u}{\delta x} - \frac{\delta v}{\delta y}$

(D)  $Y = \frac{\delta^2 u}{\delta y^2} + \frac{\delta^2 v}{\delta x^2}$

28. In the Southern Hemisphere, an outstanding tongue of low salinity, originating from the sea surface at 50° S, extends to a depth of 1 km, is a indicator of :

(A) Mediterranean Water

(B) Antarctic Intermediate Water

(C) North Hemispheric Water

(D) Arctic Intermediate Water

29. Which among the following statements is *correct* for the surface layer ?

(A) Air temperature always decreases with height

(B) Turbulent fluxes of energy and scalar are nearly constant with height

(C) Wind speed decreases with height

(D) Flow is laminar

30. An oceanic circulation driven by mechanical stirring, which transports heat, mass, freshwater and other properties in the meridional/zonal direction is called :

(A) Monsoon circulation

(B) Atmospheric circulation

(C) Thermohaline circulation

(D) Tropospheric circulation

31. Magnetic survey data needs to be connected for which of the following effects ?
- (A) Variation in magnetic indication due to polar wandering
  - (B) Variation in magnetic declination with reference to distance from APW curve path.
  - (C) Diurnal variation due to variation in Earth's magnetic field due to ionospheric changes resulting in variation in Earth's magnetic field intensity at its surface during course of day.
  - (D) Variation in sample depth to be normalised to NSL.
32. Which one of the following drainage pattern is developed over jointed and faulted rocks ?
- (A) Rectangular
  - (B) Parallel
  - (C) Centripetal
  - (D) Dendritic
33. The lowest zone of the atmosphere is troposphere. Above the tropopause, the stratosphere is characterized by relatively :
- (A) stable – dry – little vertical motion
  - (B) stable – moist – strong vertical motion
  - (C) unstable – dry – strong vertical motion
  - (D) stable – dry – strong vertical motion
34. One of the following statements about the temperature distribution over the Earth's surface is *incorrect*.
- (A) Temperature extremes occur over continental land masses
  - (B) The isotherms are displaced towards the equator over the oceans
  - (C) The hemispheric temperature gradient is steepest in winter
  - (D) The isotherms are displaced towards the equator on land.

35. By thermohaline circulation the major upwelling occurs in ..... and the downwelling occurs in .....

- (A) South Atlantic, North Atlantic
- (B) Gulf of Oman, Pacific
- (C) North Pacific, North Atlantic
- (D) North Atlantic, Indian Ocean

36. The Quaternary records have indicated that the glacial to interglacial transition is ..... and vice-a-versa is .....

- (A) Abrupt, Gradual
- (B) Gradual, Abrupt
- (C) Pulsating, Smooth
- (D) Slow, fast

37. Match the following :

**Air mass symbol**

- (a) CP
- (b) CT
- (c) E
- (d) mT

**Properties**

- (i) High temperature low moisture content
- (ii) High temperature and humidity
- (iii) Low temperature, low humidity remaining constant
- (iv) Moderately high temperatures, high relative and specific humidity

- |     |       |      |       |       |
|-----|-------|------|-------|-------|
|     | (a)   | (b)  | (c)   | (d)   |
| (A) | (iii) | (ii) | (i)   | (iv)  |
| (B) | (iii) | (i)  | (ii)  | (iv)  |
| (C) | (i)   | (iv) | (ii)  | (iii) |
| (D) | (i)   | (iv) | (iii) | (ii)  |

38. The adjustment of a river's long profile to a dam is :

I A flattening of the profile by deltaic deposition at the head of reservoir.

II A flattening of the profile by erosion immediately downstream of the dam.

- (A) I is True II is False
- (B) I is False II is True
- (C) Both I and II are True
- (D) Both I and II are False

39. As per recent data the oldest rock in cratonic nuclei in Indian Peninsula are found in :

- (A) Dharwar craton
- (B) Singhbhum craton
- (C) Boston craton
- (D) Bundelkhand craton

40. What are the main differences in the granulites of south India and granulites of central India ? Select the *correct* option.

- (A) Central Indian granulites are leusoidal deformed and sheared granulites with typical Tamil Nadu Type B|F granulites association and leptynites associated with sillimanite – spinel garnet association while South Indian Granulites are underplated gabbroic rocks.
- (B) Central Indian granulite are massif type granulites.
- (C) South Indian granulites are massif type granulites
- (D) There is no difference in the granulite in Central and Southern India.

41. The change over from laminar to turbulent flow during sedimentation by water at 20°C takes place at a critical Reynolds Number of around .....
- (A) 300  
(B) 500  
(C) 700  
(D) 900
42. The statement "the flow rate through porous media is directly proportional to the head loss and inversely proportional to the length of flow path" stands for :
- (A) Darcy's law  
(B) Newtonian flow law  
(C) Dewists law  
(D) Poiseuille's law
43. 'Fluorosis' is the disease caused due to contamination of water by :
- (A) Arsenic  
(B) Fluoride  
(C) Nitrate  
(D) Sulphate
44. Which of the following is *true* statement in relation to proton precession magnetometer ?
- (A) It uses protons from radioactive material such as uranium to detect magnetic fields  
(B) It is a vector magnetometer  
(C) It uses proton-rich liquid such as water surrounded by magnetising coil as detector.  
(D) It uses special proton magnets arranged perpendicular to each other.

45. Remote sensing techniques make use of the properties ....., emitted, reflected or diffracted by the sensed objects.

- (A) Electric waves
- (B) Sound waves
- (C) Electromagnetic waves
- (D) Wind waves

46. Which one of the following is *not* a sensor of Indian remote sensing (IRS) satellite ?

- (A) LISS - III
- (B) PAN
- (C) WiFS
- (D) TM

47. Read the following statements and identify the *correct* answers.

I : Athalweg is the line connecting points of maximum depth.

II : Most thalweg pass through a succession of pools in the channel bed that are separated by riffles.

- (A) Both I and II are correct
- (B) I is correct and II is incorrect
- (C) I is incorrect and II is correct
- (D) Both I and II are incorrect

48. What is the wavelength of visible region in the electromagnetic spectrum ?

- (A) 0.4 – 0.7  $\mu\text{m}$
- (B) 0.7 – 1.0  $\mu\text{m}$
- (C) 3.0 – 3.5  $\mu\text{m}$
- (D) 1.0 – 3.0  $\mu\text{m}$

49. In central India, which of the following is *correct* statement in relation to Vindhyan group ?

- (A) Vindhyan rocks are thickest along southern margin of Vindhyan supergroup which is a faulted contact.
- (B) Vindhyan rocks are thickest along northern margin of the supergroup near Bundelkhand massif.
- (C) Vindhyan rocks are thickest along center of the Vindhyan syncline axis
- (D) There is no variation in thickness in Vindhyan sediments.

50. The oldest life form recorded anywhere in world are .....

- (A) Trace fossils and stromatolites from Vindhyan rocks of middle proterozoic age
- (B) stromatolites from South African Greenstone belt of + 3.3 billion year age from Barbartan Greenstone belt.
- (C) Trace fossils from Karewa beds of Kashmir
- (D) Stromatolites from Jhamarkotra dolomites of Aravalli Group

51. When sonic logs are cross-multiplied with the density it produce the acoustic impedance log which help in generation of ..... logs.
- (A) Synthetic electrical  
 (B) Synthetic neutron  
 (C) Synthetic seismic  
 (D) Synthetic density
52. The three main ways of measuring the electric resistivity of formation penetrated by borehole are .....
- (A) S.P. log, spontaneous potential log, self potential log  
 (B) Sonic log, seremic log, acoustic log  
 (C) Gamma log, spectral gamma log, Natural gamma ray log  
 (D) Normal log, Lateral log, induction log
53. The *correct* order of the three stages of transformation of organic matter into hydrocarbons.
- (A) Catagenesis - diagenesis - metagenesis  
 (B) diagenesis - catagenesis - metagenesis  
 (C) Catagenesis - metagenesis - diagenesis  
 (D) Diagenesis - metagenesis - catagenesis
54. In which of the following oil and gas fields is limestone the reservoir rock ?
- (A) Cambay Basin  
 (B) Bombay high  
 (C) Krishna-Godawari Basin  
 (D) Cauvery Basin
55. Skarn deposits are developed at the contact of :
- (A) Granites and slates  
 (B) Gabbro and sandstone  
 (C) Granites and quartzites  
 (D) Felsic plutonic intrusives and carbonate rocks

56. Greenhouse effect is related to :

- (A) absorption of terrestrial radiation by atmospheric constituents
- (B) absorption of solar radiation by atmospheric constituents
- (C) albedo of earth's surface
- (D) Reflection of solar radiation by clouds

57. Cloud made solely of liquid water droplets are termed as :

- (A) Cold cloud
- (B) Ice cloud
- (C) Warm cloud
- (D) Mixed phase cloud

58. Which of the following is closely related to the description of Atlantic and Pacific types.

- (A) Abyssal plains
- (B) Continental margins
- (C) Deep sea trenches
- (D) None of the above

59. Which of the following is NOT connected in any way with submarine, hot spring vents ?

- (A) sediments rich in metallic sulfides
- (B) ecological communities living without photosynthesis
- (C) black smokers on a mid-ocean ridge
- (D) thick turbidite deposits of the continental rise

60. Kuroko type Zn-Pb-Cu deposits are the examples of :
- (A) Volcanic hosted massive sulphide deposits
  - (B) Skarn deposits
  - (C) Magmatic concentration deposits
  - (D) Pegmatite deposits
61. Chromite deposits of Himalaya are associated with :
- (A) Ophiolite complexes
  - (B) Stratiform complexes
  - (C) Duke Island-type complexes
  - (D) Intrusive granites
62. Bailadila iron ore deposit is situated in the state of :
- (A) Bihar
  - (B) Maharashtra
  - (C) Chhattisgarh
  - (D) Jharkhand
63. Glaucophane-Lawsonite association is characteristic of :
- (A) Blueschist facies
  - (B) Amphibolite facies
  - (C) Granulite facies
  - (D) Eclogite facies
64. Two pyroxene granulites in which garnet is *not* present indicate :
- (A) Low pressure granulite metamorphism
  - (B) High pressure granulite metamorphism
  - (C) Amphibolite facies metamorphism
  - (D) High temperature contact metamorphism

65. Ocean Island Basalts (OIB) are derived from ..... source.
- (A) Primitive mantle
  - (B) Subcontinental mantle
  - (C) Depleted mantle
  - (D) Lower crust
66. Which one of the following is the youngest "Continental Flood Basalt Province" ?
- (A) Deccan Traps
  - (B) Columbia River Province
  - (C) Siberian Traps
  - (D) Parana Province
67. Cassiterite is the major one mineral of :
- (A) Tungsten
  - (B) Tin
  - (C) Titanium
  - (D) Tantalum
68. Akermanite is an example of :
- (A) Cyclosilicate
  - (B) Tectosilicate
  - (C) Sorosilicate
  - (D) Nesosilicate
69. Homo sapiens are known as :
- (A) Prognathous
  - (B) Pleurognethous
  - (C) Aptopathus
  - (D) Orthognothous
70. The demise of the trilobites is connected to the arrival of the jawed fishes called as .....
- (A) Tall Tube
  - (B) Giant Clams
  - (C) Giant Crabs
  - (D) Placoderms

71. The surface features of ..... are those of three-dimension circular to elliptical draping humps and swals of about 01 meter in length  $10_s$  cm in heights.

- (A) Simple cross stratification
- (B) Trough cross stratification
- (C) Hummocky cross stratification
- (D) Ripple drift stratification

72. The group which does *not* show a *correct* sequence of the geologic column is :

- (A) Palaeocene, Eocene, Oligocene, Miocene
- (B) Devonian, Ordovician, Silurian, Permian
- (C) Palaeozoic, Mesozoic, cenozoic
- (D) Triassic, Jurassic, cretaceous

73. Which one of the following is the largest felsic volcanic province of India ?

- (A) Malani Suite
- (B) Deccan traps
- (C) Rajmahal Traps
- (D) Sylhet Traps

74. Undersaturated alkaline lavas with abundant feldspaths sanidine or anorthoclase, aegirine or aegirine augite is termed as.....

- (A) Syenite
- (B) Phonolite
- (C) Keratophyne
- (D) Limburgite

75. In AFM diagram, the suffix 'A' stands for :

- (A)  $Al_2O_3$
- (B)  $FeO + Fe_2O_3$
- (C)  $MgO$
- (D)  $Na_2O + K_2O$

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**ROUGH WORK**