Paper : **II**

Subject : **EARTH SCIENCE**

Subject Code : **32**

Roll No. | | | | | | | | |

(Figures as per admission card)

OMR Sheet No. : _____

BOOKLET SERIAL NO.

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Time : 2 Hours | Maximum Marks : 200

Number of Pages in this Booklet : **16** | Number of Questions in this Booklet : **100**

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

1. ಈ ಪುಟದ ಮೇಲ್ತುದಿಯಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರನ್ನು ಬರೆಯಿರಿ.
2. ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ನೂರು (100) ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
3. ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪುಸ್ತಿಕೆಯನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಿಕೆಯನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
   (i) ಪ್ರಶ್ನೆಪುಸ್ತಿಕೆಗೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ಟಿಕ್ಕರ್ ಸೀಲ್ ಇಲ್ಲದ ಅಥವಾ ತೆರೆದ ಪುಸ್ತಿಕೆಯನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
   (ii) **ಪುಸ್ತಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಿಕೆಯನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವೀಕ್ಷಕರಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಿಕೆಗೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚುಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.**
4. ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕಪ್ಪಾಗಿಸಬೇಕು.

   ಉದಾಹರಣೆ : (A) (B) ● (D)

   (C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
5. ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಜೊತೆಯಲ್ಲಿ **ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು.** OMR ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಲ್ಲದೆ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
6. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
7. ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಿಕೆಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
8. ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗುತ್ತೀರಿ.
9. ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವೀಕ್ಷಕರಿಗೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMRನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯಕೂಡದು.
10. ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
11. **ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್‌ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.**
12. **ಕ್ಯಾಲ್ಕುಲೇಟರ್, ವಿದ್ಯುನ್ಮಾನ ಉಪಕರಣ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯ ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.**
13. **ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.**
14. **ಕನ್ನಡ ಮತ್ತು ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ವ್ಯತ್ಯಾಸಗಳು ಕಂಡುಬಂದಲ್ಲಿ, ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಗಳಲ್ಲಿರುವುದೇ ಅಂತಿಮವೆಂದು ಪರಿಗಣಿಸಬೇಕು.**

Instructions for the Candidates

1. Write your roll number in the space provided on the top of this page.
2. This paper consists of Hundred multiple-choice type of questions.
3. At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as below :
   (i) To have access to the Question Booklet, tear off the paper seal on the edge of the cover page. Do not accept a booklet without sticker seal or open booklet.
   (ii) **Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got 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.**
4. Each item 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 : (A) (B) ● (D)

   where (C) is the correct response.
5. Your responses to the questions are to be indicated in the **OMR Sheet kept inside this Booklet.** If you mark at any place other than in the circles in the OMR Sheet, it will not be evaluated.
6. Read the instructions given in OMR carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your name 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, you will render yourself liable to disqualification.
9. You have to return the OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
10. You can take away question booklet and carbon copy of OMR Answer Sheet after the examination.
11. **Use only Blue/Black Ball point pen.**
12. **Use of any calculator, electronic gadgets or log table etc., is prohibited.**
13. **There is no negative marks for incorrect answers.**
14. **In case of any discrepancy found in the Kannada translation of a question booklet the question in English version shall be taken as final.**

EARTH SCIENCE

Paper – II

Note : This paper contains **hundred (100)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. Most abundant element of the earth crest is

(A) Nitrogen

(B) Aluminium

(C) Oxygen

(D) Carbon

2. Magnetic permeability (μ) and magnetic susceptibility (k) are connected by relation

(A) $k = 1 + 4\pi^2\mu$

(B) $k = 1 - 4\pi\mu$

(C) $\mu = 1 + 4\pi k$

(D) $\mu = 1 + 4\pi^2 k$

3. For a Proton Precession Magnetometer, the Larmore frequency of precession is equal to

(A) $2\pi F . \gamma_n$

(B) $2\pi F / \gamma_n$

(C) $\gamma_n / 2\pi F$

(D) $\gamma_n . F/2\pi$

Where F – magnetic field and

γ_n –gyromagnetic ratio of proton

4. Which one of the following methods is best suited for locating a dissiminated sulphide deposit ?

(A) Induced polarisation method

(B) Self potential method

(C) Resistivity method

(D) Equi-potential line method

5. SP logs are best suited to

1. detect permeable beds.
2. determine formation water resistivity
3. determine volume of shale in permeable beds.
4. detect boundaries of permeable beds.

(A) 1, 2 and 3 only

(B) 1, 3 and 4 only

(C) 2, 3 and 4 only

(D) 1, 2, 3, 4

6. Usual rate of movement of groundwater is

(A) few millimeters per day

(B) few centimeters per day

(C) few meters per day

(D) groundwater does not move

7. Using Darcy's law calculate discharge rate for a 100 m thick sand in one kilometer wide valley. Assume sand to have a permeability value of 50 m/day with water table slope of 1 m /k m.

(A) 2,500 m^3/day

(B) 5,000 m^3/day

(C) 7,500 m^3/day

(D) 10,000 m^3/day

8. Sr initial ratio of the crystal recycled rocks are

(A) Less than the mantle derived rocks

(B) More than the mantle derived rocks

(C) Same as mantle derived rocks

(D) No relation exists with mantle derived rocks

9. The permanent change that occurs in a solid material due to growth of fracture and /or due to sliding on fractures when stresses exceed a critical value is known as

(A) Elastic deformation

(B) Plastic deformation

(C) Brittle deformation

(D) Ductile deformation

10. If the annual fluctuation of water table in an unconfined aquifer covering an area of 200 ha is 5 m and the specific yield is 15%, calculate annual groundwater recharge.

(A) 1000 ha m

(B) 30 ha m

(C) 75 ha m

(D) 150 ha m

11. Match the following :

List-I	List-II
a. Cyclic twin	1. Albrite
b. Penetration twin	2. Argonite
c. Transform twin	3. Rutile
d. Contact twin	4. Quartz

Codes :

	a	b	c	d
(A)	1	2	3	4
(B)	2	1	4	3
(C)	4	2	3	1
(D)	3	2	1	4

12. The Eastern Dharwar Craton overlies

(A) Deccan traps

(B) Granitic basement

(C) Gneissic basement

(D) Shahabad limestone

13. Joints of one set are relatively long, whereas the joints of the other are relatively short cross joints, which terminate at the long joint are known as

(A) Conjugate joints

(B) Pinnate joints

(C) Release joints

(D) Orthogonal joints

14. A subtle roughness on the surface of some joints that macroscopically resembles the imprint of a feather is known as

(A) Arrest lines

(B) Twist hackle

(C) Plume axis

(D) Plumose structure

15. What is the temperature window for significant oil generator ?

(A) 30 – 70°C

(B) 40 – 90°C

(C) 50 – 100°C

(D) 60 – 120°C

16. **Assertion (A)** : In India coal fields are always associated with tectonism.

Reason (R) : Lignite occurs in Tamil Nadu and Anthracite occurs in Jammu and Kashmir. Both of them belong to tertiary age.

(A) Both A and R are true and R is the correct explanation

(B) Both A and R are true but, R is not the correct explanation

(C) A is true but R is false

(D) A is false but R is true

17. Match the following list of items of Group – I (Stratigraphic Units) with those of Group – II (Sedimentary Basins) and choose the correct option.

Group – I (Stratigraphic Units)	**Group – II (Sedimentary Basins)**
a. Badami Group	1. Chatisgarh
b. Papaghani Group	2. Vindhyan
c. Kheinjua Group	3. Pranhita-Godavari
d. Sullavai Group	4. Cuddapah
	5. Kaladgi

	a	**b**	**c**	**d**
(A)	2	5	1	4
(B)	5	3	2	4
(C)	5	4	2	3
(D)	2	5	4	1

18. Which one of the following is 'NOT' an erosional structure ?

(A) Rill Marks

(B) Scour Marks

(C) Chevron Marks

(D) Swash Marks

19. Internally structureless sand-sized carbonate particle allochem with an average size of 100 – 500 microns, composed of microcrystalline calcite is termed as

(A) Oolite (B) Ooid

(C) Peloid (D) Pisoid

20. Match the following from Group – I (morphological features) with those from Group – II (fossils) to choose the correct option.

Group – I (morphological features)	**Group – II (fossils)**
a. Cusp	1. Foraminifer
b. Sicula	2. Coral
c. Calyx	3. Gastropod
d. Callus	4. Graptolite
	5. Conodont

	a	**b**	**c**	**d**
(A)	5	1	4	2
(B)	4	2	3	5
(C)	5	4	2	3
(D)	4	5	3	2

21. Active spreading plate boundaries in the oceanic lithosphere are found in

(A) Mid oceanic ridge

(B) Subduction zone

(C) Obduction zone

(D) Collisional zone

22. Phase transition at Mohorovicic discontinuity is due to

(A) Change in composition from Gabbro to Eclogite

(B) Change in composition from Gabbro to Granite

(C) Change in composition from Pegmatite to Dolerite

(D) Change in composition from carbonatite to kimberlite

23. According to the seismic zonation map of India, highest level of seismicity is found in

(A) Zone 1

(B) Zone 5

(C) Zone 2

(D) Zone 6

24. A gap in depositional sequence represented by the unconformity is called

(A) break

(B) hiatus

(C) gap

(D) interval

25. The main driving force for migration of petroleum is

(A) capillary action

(B) porosity

(C) buoyancy

(D) surface tension

26. Steeply plunging inclined folds are known as

(A) Isocline fold

(B) Recline fold

(C) Recumbent fold

(D) Vertical upright fold

27. If the porosity and effective porosity of the geological formations are 32% and 27% respectively. What will be the specific yield of the formation if specific retention is 9% ?

(A) 23%

(B) 5%

(C) 14%

(D) 18%

28. Earth's gravitational force is maximum at

(A) Equator

(B) Pole

(C) At 45° Longitude

(D) At 45° Latitude

29. Which of the following methods is best suited for demarcating polluted zones of groundwater ?

(A) Water divining method

(B) Self potential method

(C) Magnetic method

(D) Seismic method

30. Which is the type of fault is observed in both continental and oceanic environment ?

(A) Strike-slip fault

(B) Dip fault

(C) Oblique fault

(D) Wrench fault

31. In whole Asia, oil reserves are estimated to be _____ of world oil reserves.

(A) 3%

(B) 5%

(C) 8%

(D) 12%

32. Presence of pseudotachylyte in a terrane indicate

(A) Ancient volcanic activity

(B) Ancient earthquake activity

(C) Ancient subduction activity

(D) Ancient mantle-plume activity

33. P_1, P_2 and P_3 are resistivities of three horizontal formations, match the following.

List – I	**List – II**
a. $P_1 < P_2 < P_3$	1. A type curve
b. $P_1 < P_2 > P_3$	2. Q type curve
c. $P_1 > P_2 < P_3$	3. K type curve
d. $P_1 > P_2 > P_3$	4. H type curve

	a	**b**	**c**	**d**
(A)	1	2	3	4
(B)	3	2	1	4
(C)	2	3	4	1
(D)	1	3	4	2

34. If density is represented by 'ρ' and Poisson's ratio by 'μ' then the velocity of the shear wave will be

(A) $\sqrt{\mu / \rho}$

(B) $\sqrt{\mu} / \rho$

(C) μ/ρ

(D) $\mu.\rho$

35. The science of study of occurrence and distribution of elements in the universe is called

(A) Geochronology

(B) Geochemistry

(C) Cosmochemistry

(D) Mineralchemistry

36. Gossan or cap rock are good indicator of

(A) Hydrothermal deposits

(B) Secondary sulphide deposits

(C) Placer deposits

(D) Residual deposits

37. During tunnelling, fulling of rock blocks from top or sides due to release of stresses is known as

(A) Blockage

(B) Water rush

(C) Rock full

(D) Rock burst

38. Five major mass extinction events have occurred in the geological history. Which of the following mass extinction event in the geological history is associated with the conspicuous Iridium anomaly ?

(A) Permian / Triassic

(B) Precambrian / Ordovician

(C) Eocene / Oligocene

(D) Cretaceous / Tertiary

39. As compared to magnetite, hematite is

(A) more magnetic and richer in Fe

(B) more magnetic but has a lower Fe content

(C) less magnetic and has a lower Fe content

(D) less magnetic but a higher Fe content

40. Which technique is used to detect and monitor the tropical storms, which may become hurricane ?

(A) Ocean buoys

(B) Aircraft

(C) Satellites

(D) Coastal observers

41. If the landform is formed due to fast flowing rivers, then the resulting landform is considered as

(A) Natural levee

(B) Flood plain

(C) Point bars

(D) Channel bars

42. The surface wind speed normally, increase towards the center of a hurricane due to

(A) Warmer water

(B) Reduced friction

(C) Conservation of angular momentum

(D) Stronger Coriolis effect

43. Which is the largest dam in India ?

(A) KRS Dam

(B) Nagarjunsagar Dam

(C) Bhakra Dam

(D) Hirakud Dam

44. Gold occurrence in the Hatti-Maski schist belt belongs to

(A) Western Dharwar Craton (WDC)

(B) Eastern Dharwar Craton (EDC)

(C) Central Dharwar Craton (CDC)

(D) Granulite Terrain

45. Radioactivity in an atom of an element takes place spontaneously in order to achieve

(A) Stability in the nucleus of an atom

(B) Instability in the nucleus of an atom

(C) Capturing of electron

(D) Positron anhilation

46. Which of the following sequences places the different units of the geological time scale in proper order beginning with the greatest expanse of time ?

(A) Eon - epoch – period – era

(B) Era - period – eon – epoch

(C) Eon – era - period - epoch

(D) Era – eon - epoch – period

47. Which fundamental geologic principle allows geologists to use the remains of organisms when correlating rock units ?

(A) Cross cutting relationships

(B) Uniformitarianism

(C) Fossil succession

(D) Original horizontality

48. The temperature of the visible part of the sun is about

(A) 8000° Celsius

(B) 5500° Celsius

(C) 6500° Celsius

(D) 3500° Celsius

49. NASA's _____ is the first-ever mission to touch the sun.

(A) Parker Solar Probe

(B) Sputnik

(C) Aditya

(D) Apollo Mission

50. In fluvial geomorphology, upbuilding of the floor of a stream channel by continued deposition of bed load is termed as

(A) Meandering

(B) Aggradation

(C) Sedimentation

(D) Diagenesis

51. Waterfalls and rapids along the river course indicates _____ stage of the river.

(A) Youthful (B) Mature

(C) Old (D) Very old

52. When Zircon mineral is impacted by meteorite, due to shock effects _____ mineral is formed.

(A) Riedite (B) Stishovite

(C) Sphene (D) Graphene

53. Planar zone of seismicity is a subduction, called

(A) Benioff zone

(B) Fault zone

(C) Collisional zone

(D) Rift zone

54. The super continent that existed intact about 300 million years ago in a geologic time unit is

(A) Pangea

(B) Gondwana

(C) Ur

(D) Panthalassa

55. The diameter of the largest impact crater found in Vredefort in South Africa is

(A) 130 km (B) 160 km

(C) 500 km (D) 260 km

56. Parts per million is same as

(A) mg. of solute / g of solution

(B) mg. of solute / litre of solution

(C) mg. of solute / 100 cc of solution

(D) g of solute / kg of solution

57. For a confined aquifer of thickness 'h' and permeability 'k', the transmissivity is given as

(A) h / k (B) k / h

(C) k . h (D) $k . h^2$

58. A planar feature with well oriented minerals is

(A) Foliation

(B) Lineation

(C) Schistosity

(D) Bedding plane

59. **Assertion (A)** : AFM diagram is useful for the study of pelitic rocks.

Reason (R) : Pelitic rocks are rich in plagioclase Feldspar and Quartz.

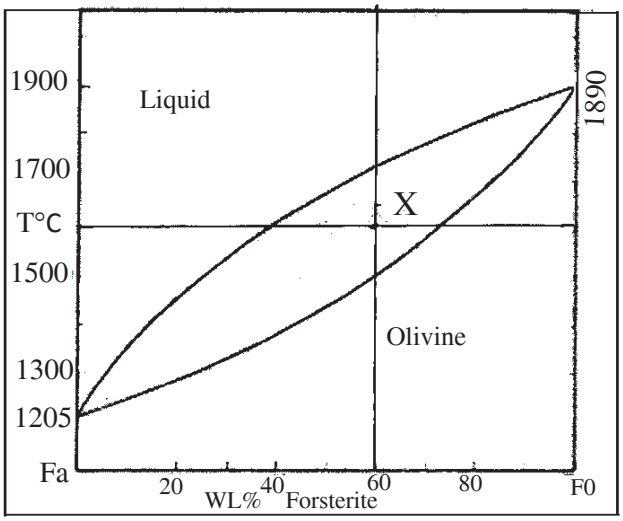
(A) Both A and R are true and R is correct explanation

(B) Both A and R are true but, R is not correct explanation

(C) A is true but R is false

(D) A is false but R is true

60. Applying Lever's rule, determine the liquid and olivine proportion at a point 'X' marked on a given binary phase diagram.



Liquid – Olivine

(A) 60 – 40

(B) 40 – 60

(C) 70 – 30

(D) 30 – 70

61. Two major types of basaltic magma are _____ and _____

(A) Acidic and Basic

(B) Tholeitic and Alkaline

(C) Carbonatitic and Basic

(D) Kimberlitic and Acidic

62. Micrographic intergrowth of feldspar and quartz is termed as

(A) Granophyric texture

(B) Myrmekite texture

(C) Intersertal texture

(D) Symplictitic texture

63. Source for generation basaltic lava at mid oceanic ridge is

(A) Partial melting of ultramafic magma

(B) Partial melting of acidic magma

(C) Fractional crystallisation of basic magma

(D) Assimilation of country rock

64. The process in which preexisting rock is converted into granite without undergoing melting

(A) Metasomatism

(B) Pneumatolysis

(C) Granitization

(D) Assimilation

65. Which of the following mineral shows parallel extinction ?

(A) Quartz

(B) Hornblende

(C) Calcite

(D) Biotite

66. How do you identify the untwinned plagioclase under the optical microscope ?

(A) by type of extinction

(B) by type of twinning

(C) by its interference figure

(D) by its pleochroic scheme

67. Oldest rock in India is found in _____ craton.

(A) Bastar

(B) Dharwar

(C) Singhbhum

(D) Aravalli

68. With regard to the major dissolved components of sea water, which one of the following options represent higher concentrations ?

(A) bicarbonate ions, silicate ions, chloride ions

(B) calcium ions, magnesium ions, chloride ions

(C) chloride ions, sodium ions, sulfate ions

(D) chloride ions, magnesium ions, potassium ions

69. Choose the correct order representing increased wind speed of the following descriptive terms given in Beaufort wind scale.

(A) Breeze $\rightarrow$ Gale $\rightarrow$ Hurricane $\rightarrow$ Storm

(B) Breeze $\rightarrow$ Gale $\rightarrow$ Storm $\rightarrow$ Hurricane

(C) Gale $\rightarrow$ Breeze $\rightarrow$ Hurricane $\rightarrow$ Storm

(D) Breeze $\rightarrow$ Hurricane $\rightarrow$ Storm $\rightarrow$ Gale

70. Submarine volcanism is indicated by the presence

(A) Ropy lava

(B) Flow structures

(C) Layered structure

(D) Pillowed structure

71. Detached clouds in the form of white, delicate filaments, mostly white patches or narrow bands are called as

(A) Cirrus

(B) Stratus

(C) Altostratus

(D) Stratocumulus

72. Normally, what type of soils are formed by wind dust in and around hot deserts ?

(A) Loamy soil

(B) Alluvial soil

(C) Loess soil

(D) Silty soil

73. The term used to describe the peeling away of sheets of rock from a rock's surface due to a range of physical and chemical process during weathering is

(A) Deflation

(B) Exfoliation

(C) Partioning

(D) Disintegration

74. In Insat satellite, which channel / band is used for detecting presence of moisture in the middle levels of the atmosphere ?

(A) Infrared

(B) Water vapour

(C) Mid infrared

(D) Thermal infrared

75. When the interacting electromagnetic radiation has the larger dimension than the atmospheric particles, then the resulting scattering is called as

(A) Non-selective

(B) Raman

(C) Mie

(D) Rayleigh

76. In which type of fluvial landforms, low ridges are formed along the banks of rivers due to the result of a velocity decrease and deposition of a sediment laden streams overflow their banks during flood ?

(A) Point bars

(B) Channel bars

(C) Deltas

(D) Natural levees

77. WIDMANSTATTEN figures are the characteristic features of _____ type meteorites.

(A) Siderite

(B) Chondrite

(C) Achondrite

(D) Tektite

78. _____ is an example for rapid mass movement.

(A) Mudflow

(B) Soil creep

(C) Slow subsidence

(D) Rock creep

79. _____ is the highest plateau in the world.

(A) Colorado Plateau

(B) Pamir Plateau

(C) Patagonist Plateau

(D) Potwar Plateau

80. Which of the following represents a process of chemical weathering ?

(A) Mass Exfoliation

(B) Thermal expansion and contraction

(C) Frost action and crystal growth

(D) Hydration and Hydrolysis

81. When there is a balance between the upward pressure gradient force and the downward force of gravity, the atmosphere is said to be in _____ balance.

(A) Hydrostatic

(B) Geostrophic

(C) Hypsometric

(D) Baroclinic

82. Match the following :

List – I	**List – II**
a. Subduction zone	1. Divergent
b. Spreading of ridges and formation of new crust	2. Continental Collision
c. Formation of linear valley and undersea canyons	3. Convergent
d. Formation of folded mountain chains	4. Transform

	a	**b**	**c**	**d**
(A)	1	2	3	4
(B)	2	3	1	4
(C)	3	1	4	2
(D)	4	2	3	1

83. Grain size of the resultant rock becomes smaller in

(A) Regional metamorphism

(B) Burial metamorphism

(C) Cataclastic metamorphism

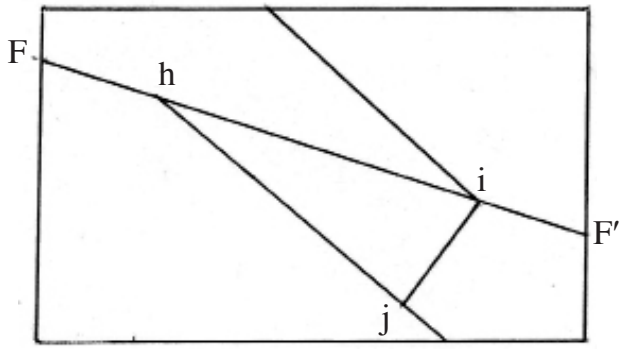
(D) Contact metamorphism

84. Match the following :

Rock type	**Their origin**
a. Norite	1. Deep seated plutonic
b. Essexite	2. Deep seated metamorphic
c. Eclogite	3. Sedimentary
d. Clay	4. Volcanic

	a	**b**	**c**	**d**
(A)	1	3	4	2
(B)	2	1	3	4
(C)	1	4	2	3
(D)	4	1	2	3

85. In the map given below, F – F′ is the fault trace. Identify the types of separation along h-i, h-j and i-j.



(A) h-i – dip separation, h-j – offset, j-i – overlap

(B) h-i – strike-slip separation, h-j – overlap, j-i – offset

(C) h-i – dip-slip separation, h-j – strike-slip separation, j-i – dip separation

(D) h-i – strike-slip separation, h-j – strike-slip separation, j-i – dip separation

86. Chromite deposits occur in

(A) mafic rocks

(B) ultramafic rocks

(C) felsic rocks

(D) acidic rocks

87. Radioactive elements are concentrated mainly in the earth crust due to

(A) Geochemical coherence

(B) Geophysical coherence

(C) Geological coherence

(D) Geo-botanical coherence

88. Elements with high positive potentials such as alkali and alkaline earth metals are

(A) Atmophile

(B) Lithophile

(C) Siderophile

(D) Chalcophile

89. Match the sediment gravity terms (Group – I) with the grain support mechanisms (listed in Group – II).

Group – I	**Group – II**
a. Turbity current	1. Matrix strength
b. Debris flow	2. Fluid turbulence
c. Liquified flow	3. Dispersive pressure
d. Grain flow	4. Escaping pore fluid

	a	**b**	**c**	**d**
(A)	2	3	1	4
(B)	3	2	1	4
(C)	2	1	4	3
(D)	1	3	4	2

90. Which one of the following is unlikely to happen in the Bay of Bengal, if the fresh water discharges from Peninsular and Himalayan rivers is drastically reduced ?

(A) Increase in cyclonic activity

(B) Increase in upper ocean mixing

(C) Deepening of mixed layer

(D) Initiation of winter convection

91. Based on the given option choose the probable environment of the stratigraphic sequence represented by the below given litho units from older to younger.

Poorly sorted sandstone with unimodal palaeocurrent → sand-mud alteration with bipolar palaeocurrent → well sorted sandstone with bimodal palaeocurrent.

(A) Glacial → fluvial → eolian

(B) Fluvial → lacustrine → tidal

(C) Fluvial → tidal → shoreface

(D) Glacial → lacustrine → eolian

92. Which of the following are passive geomorphic processes ?

(A) Abrasion and weathering

(B) Weathering and mass movements

(C) Abrasion and deflation

(D) Mass movement and cavitation

93. Increasing primary productivity in the oceans causes

(A) Decrease in atmospheric CO_2

(B) Increase in atmospheric CO_2

(C) Increase in atmospheric dust

(D) Decrease in atmospheric dust

94. In which one of the following textural combination highest permeability is observed in the sedimentary rocks ?

(A) Well sorted, Angular

(B) Poorly sorted, poorly rounded

(C) Well sorted, well rounded

(D) Poorly sorted, well rounded

95. Match the following microfossil taxa (listed in Group – I) with their test composition (listed in Group – II).

Group – I (Microfossil taxa)	**Group – II (Test composition)**
a. Radiolaria	1. Calcareous
b. Acritarch	2. Phosphatic
c. Conodont	3. Siliceous
d. Foraminifera	4. Organic-walled

	a	**b**	**c**	**d**
(A)	3	2	1	4
(B)	3	4	2	1
(C)	2	4	3	1
(D)	3	1	4	2

96. _____ is a sand ridge that connects an island or sea stack to the mainland.

(A) Spit

(B) Tambolo

(C) Barrier beach

(D) Wave-cut cliff

97. Match the indicated chemical weathering processes (listed in Group – I) with appropriate responses (Group – II).

Group – I	Group – II
a. Dissolution	1. Reaction of a substance with water
b. Oxidation	2. Atomic bonds broken by dipolar water molecules
c. Hydrolysis	3. Electrons are lost from one element

	a	b	c
(A)	2	3	1
(B)	1	3	2
(C)	2	1	3
(D)	3	2	1

98. Most limestones have large component of $CaCO_3$ that was originally extracted from seawater by

(A) Evaporation

(B) Inorganic chemical reaction

(C) Chemical weathering

(D) Organisms

99. The clouds in the atmosphere, normally represents a source of heat due to

(A) They increase the absorption of solar radiation

(B) They conduct heat from the earth surface

(C) Cloud formation releases latent heat to the air

(D) Melting ice crystals in the cloud absorbs heat

100. Match the Satellites with their sensors.

List – I	List – II
a. Landsat - 5	1. Advanced very high Resolution Radiometer
b. SPOT – 1	2. High resolution visible imaging sensor
c. IRS – 1B	3. Thematic mapper
d. NOAA	4. Linear imaging self scanning sensor

	a	b	c	d
(A)	3	2	4	1
(B)	1	3	4	2
(C)	2	1	3	4
(D)	4	2	3	1

Space for Rough Work