SUBJECT CODE	SUBJECT
A-08-18	EARTH SCIENCES

HALL TICKET NUMBER								PAPER
								II

OMR SHEET NUMBER						NUMBER OF QUESTIONS
						100

DURATION	MAXIMUM MARKS	NUMBER OF PAGES
2 HOURS	200	16

QUESTION BOOKLET NUMBER

This is to certify that, the entries made in the above portion are correctly written and verified.

Candidates Signature **Name and Signature of Invigilator**

Instructions for the Candidates

1. Write your Hall Ticket 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 this cover page. Do not accept a booklet without sticker-seal and do not accept an 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.**
   (iii) After this verification is over, the Test Booklet Number should be entered in the OMR Sheet and the OMR Sheet Number should be entered on this Test Booklet.
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 items are to be indicated in the **OMR Answer Sheet given to you**. If you mark at any place other than in the circle or half circle or semi circle in the Answer Sheet, it will not be evaluated.
6. Read instructions given inside 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. **The candidate must handover 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. The candidate is allowed to take away the carbon copy of OMR Sheet and used Question paper booklet at the end of the examination.
10. **Use only Blue/Black Ball point pen.**
11. **Use of any calculator or log table etc., is prohibited.**
12. **There is no negative marks for incorrect answers.**

అభ్యర్థికి సూచనలు

1. ఈ పుట పై భాగంలో ఇవ్వబడిన స్థలంలో మీ హాల్‌టికెట్ నంబరు రాయండి.
2. ఈ ప్రశ్న పత్రము వంద (100) బహుళైచ్ఛిక ప్రశ్నలను కలిగి ఉంది.
3. పరీక్ష ప్రారంభమున ఈ ప్రశ్నాపత్రము మీకు ఇవ్వబడుతుంది మొదటి ఐదు నిమిషములలో **ఈ ప్రశ్నాపత్రమును తెరిచి కింద తెలిపిన అంశాలను తప్పనిసరిగా పరిచూసుకోండి.**
   (i) ఈ ప్రశ్న పత్రమును చూడడానికి కవర్ పేజి అంచున ఉన్న కాగితపు సీలును చించండి. కాగితపు సీలులేని మరియు ఇదివరకే తెరిచి ఉన్న ప్రశ్నాపత్రమును మీరు అంగీకరించవద్దు.
   (ii) **కవరు పేజి పై ముద్రించిన సమాచారం ప్రకారం ఈ ప్రశ్న పత్రములోని పేజీల సంఖ్యను మరియు ప్రశ్నల సంఖ్యను సరిచూసుకోండి. పేజీల సంఖ్యకు సంబంధించి గానీ లేదా సూచించిన సంఖ్యలో ప్రశ్నలు లేకపోవుట లేదా నిజప్రతి కాకపోవుట లేదా ప్రశ్నలు క్రమపద్ధతిలో లేకపోవుట లేదా ఏవైనా తేడాలుండుట వంటి దోషపూరితమైన ప్రశ్న పత్రాన్ని పెంటనే మొదటి ఐదు నిమిషాల్లో పరీక్షా పర్యవేక్షకునికి తిరిగి ఇచ్చివేసి దానికి బదులుగా సరిగ్గా ఉన్న ప్రశ్నపత్రాన్ని తీసుకోండి. తదనంతరం ప్రశ్నపత్రము మార్చబడదు అదనపు సమయం ఇవ్వబడదు.**
   (iii) పై విధంగా సరిచూసుకొన్న తర్వాత ప్రశ్నాపత్రం సంఖ్యను OMR పత్రము పై అదేవిధంగా OMR పత్రము సంఖ్యను ఈ ప్రశ్నాపత్రము పై నిర్దిష్ట స్థలంలో రాయవలెను.
4. ప్రతి ప్రశ్నకు నాలుగు ప్రత్యామ్నాయలు (A), (B), (C) మరియు (D) లుగా ఇవ్వబడ్డాయి. ప్రతి ప్రశ్నకు సరైన జవాబును ఎన్నుకొని OMR పత్రములో ప్రతి ప్రశ్నా సంఖ్యకు ఇవ్వబడిన నాలుగు వృత్తాల్లో సరైన జవాబు సూచించే వృత్తాన్ని బాల్ పాయింట్ పెన్‌తో కింద తెలిపిన విధంగా పూరించాలి
   ఉదాహరణ : (A) (B) ● (D)
   (C) సరైన ప్రతిస్పందన అయితే.
5. ప్రశ్నలకు జవాబును ఈ ప్రశ్నపత్రముతో ఇవ్వబడిన OMR పత్రము పైన ఇవ్వబడిన వృత్తాల్లోనే పూరించి గుర్తించాలి. అలాకాక సమాధాన పత్రం పై వేరొక చోట గుర్తించిన లేక సగ వృత్తం లేదా అసంపూర్ణ వృత్తాన్ని నింపిన మీ జవాబు మూల్యాంకనం చేయబడదు.
6. ప్రశ్న పత్రము లోపల ఇచ్చిన సూచనలను జాగ్రత్తగా చదవండి.
7. చిత్తుపనిని ప్రశ్నపత్రము చివర ఇచ్చిన ఖాళీ స్థలములో చేయాలి.
8. OMRపత్రము పై నిర్ణీత స్థలంలో సూచించబడిన వివరాలు తప్పించి ఇతర స్థలంలో మీ గుర్తింపును తెలిపే విధంగా మీ పేరు రాయడం గానీ లేదా ఇతర చిహ్నాలను పెట్టడం గానీ చేసినట్లయితే మీ అనర్హతకు మీరే బాధ్యులవుతారు.
9. **పరీక్ష పూర్తయిన తర్వాత OMR పత్రాన్ని తప్పనిసరిగా పరీక్ష పర్యవేక్షకుడికి ఇవ్వాలి.** వాటిని పరీక్ష గది బయటకు తీసుకువెళ్ళకూడదు. పరీక్ష పూర్తయిన తరువాత అభ్యర్థులు ప్రశ్న పత్రాన్ని OMR పత్రం యొక్క కార్బన్ కాపీని తీసుకువెళ్ళవచ్చు
10. **నీలి/నల్ల రంగు బాల్ పాయింట్ పెన్ మాత్రమే ఉపయోగించాలి.**
11. **లాగరిథమ్ టేబుల్స్, క్యాలిక్యులేటర్‌లు, ఎలక్ట్రానిక్ పరికరాలు మొదలగునవి పరీక్ష గదిలో ఉపయోగించడం నిషేధం.**
12. **తప్పు సమాధానాలకు మార్కుల తగ్గింపు లేదు.**

EARTH SCIENCES

Paper – II

1. Geoid is a

(A) Perfect ellipsoid

(B) Not perfect ellipsoid

(C) Perfect spheroid

(D) Not perfect spheroid

2. Mohorovicic discontinuity separates

(A) Mantle from outer core

(B) Inner core from outer core

(C) Crust from Mantle

(D) Crust from Atmosphere

3. Airy's hypothesis assumes that uppermost layer of earth has

(A) Uniform thermal conductivity

(B) Variable thermal conductivity

(C) Uniform density

(D) Variable density

4. "A line segment joining a planet and the sun sweeps at equal areas during equal interval of time". This is the statement of

(A) Kepler's First law

(B) Kepler's Second law

(C) Kepler's Third law

(D) Copernicus theory

5. Limit for Radiocarbon dating is

(A) 20,000 yrs.

(B) 40,000 yrs.

(C) 60,000 yrs.

(D) 80,000 yrs.

6. Match the following :

	Period	Age
a.	Cretaceous	i. 24 Ma – 34 Ma
b.	Jurassic	ii. 34 Ma – 55 Ma
c.	Miocene	iii. 99 Ma – 144 Ma
d.	Eocene	iv. 159 Ma – 180 Ma

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

7. Which of the following minerals is largely derived from Ocean waters ?

(A) Bromine

(B) Gold

(C) Silver

(D) Bauxite

8. A general term that refers to all processes of weathering, erosion and transportation is

(A) Denudation

(B) Degradation

(C) Gradation

(D) Sedimentation

9. The soil process which is prevalent in conditions of high temperature and heavy rainfall with alternate wet and dry conditions is known as

(A) Podzolisation

(B) Calcification

(C) Laterisation

(D) Salinisation

10. _____ are the right hand tributaries of Krishna river.

(A) Paleru and Munneru

(B) Bhima and Dindi

(C) Peddavagu and Musi

(D) Malaprabha and Tungabhadra

11. Himalayan type orogens are caused by

(A) Collision of two continental plates

(B) Collision of two Oceanic plates

(C) Subduction of Oceanic plate and continental plate

(D) Collision of continental plate and oceanic plate

12. Elastic deformation is a very important parameter

(A) in investigating the seismic waves through the earth

(B) in finding the flow direction of groundwater

(C) in studying the radioactivity

(D) in mineral exploration

13. The San Andreas fault is a

(A) Dip-slip fault

(B) Normal fault

(C) Reverse fault

(D) Strike-slip fault

14. Which of the following statements is true ?

(A) P – Waves travel only through solid part of the earth

(B) P – Waves travel only through liquid part of the earth

(C) P – Waves travels not only through the solid part of the earth but also the liquid part of the core

(D) P – Waves can be reflected but cannot be refracted

15. The average density of the earth is

(A) 8.5 grams/cc

(B) 5.5 grams/cc

(C) 2.7 grams/cc

(D) 10.2 grams/cc

16. In a thunderstorm the voltage of the associated lightning will be maximum of

(A) 1000 volts

(B) 10000 volts

(C) 100000 volts

(D) 1000000 volts

17. The average height of the Atmosphere Boundary Layer is

(A) 50 m

(B) 500 m

(C) 1000 m

(D) 1500 m

18. The layer in which ozone is present in the atmosphere is

(A) Stratosphere

(B) Mesosphere

(C) Thermosphere

(D) Troposphere

19. The only land locked Ocean of the world is

(A) Arctic Ocean

(B) Atlantic Ocean

(C) Indian Ocean

(D) Pacific Ocean

20. The Indian sub- continent gets precipitation predominantly from

(A) South West Monsoon

(B) Cyclones

(C) Western Disturbances

(D) North East Monsoon

21. Water evaporation, water vapour condensation, precipitates on the land and oceans, infiltration and surface run-off processes are collectively known as

(A) Hydrological cycle

(B) Geochemical cycle

(C) Atmospheric cycle

(D) Water cycle

22. Water resources can be conserved by adopting

(A) Groundwater exploitation

(B) Watershed management practices

(C) Surface water use

(D) Intensive irrigation

23. Solar energy resource falls in the category of

(A) Conventional energy resource

(B) Non-renewal energy resource

(C) Non-conventional energy resource

(D) Pollution causing energy resource

24. Landslides cause damage to nature and mankind and occur

(A) Along the mountain regions

(B) Ground surface

(C) Oceans

(D) Basins

25. The unit used to measure the wavelength along electromagnetic spectrum is

(A) Centimeter

(B) Micrometer

(C) Meter

(D) Nanometer

26. Hornfelse is the product of

(A) Contact metamorphism

(B) Thermal metamorphism

(C) Retrograde metamorphism

(D) Dynamo-thermal metamorphism

27. The unit cell of _____ contains eight $X_3Y_2Z_3O_{12}$ formula units.

(A) Plagioclase

(B) Garnet

(C) Enstatite

(D) Biotite

28. Slickensides are

(A) Axial planes of folds

(B) Surface that result from unconformities

(C) Polished and striated surfaces that result from friction along the fault plane

(D) Vertical joints that resulted from tectonic activity

29. Match the following :

a. Island arcs	i. Formed from the submarine eruption of oceanic crustal upper mantle
b. Hotspots	ii. The point at which three plate boundaries meet
c. Ophiolites	iii. A portion of the earth's surface which experiences volcanism
d. Triple junction	iv. Created through the collision of tectonic plates in an ocean setting

Codes :

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

30. Example of divergent type plate boundary

(A) Greenland island

(B) Mid-Atlantic ridge

(C) Island of Sri Lanka

(D) Antarctica continent

31. Match the following :

a. Glossopteris	i. Well preserved entire organism
b. Trace fossils	ii. Structures which resemble fossilised organic remains
c. Pseudo fossils	iii. Plant fossil
d. Body fossils	iv. Foot prints

Codes :

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

32. Index fossils are used for

(A) Mineral Exploration

(B) Groundwater exploration

(C) Remote Sensing

(D) Dating and identification of rocks

33. Succession of the alternate layers of coarse current bedded material and fine grained horizontal laminae is termed as

(A) Cross bedding

(B) Torrential bedding

(C) Graded bedding

(D) Ripple marks

34. Coral reefs are the examples for the following organic structures

(A) Druse

(B) Geode

(C) Bioherms

(D) Concretions

35. A climate cycle in the Pacific Ocean with a global impact on weathering pattern

(A) Coriolis Effect

(B) El Nino

(C) Ekman Spiral

(D) Hydrological cycle

36. The accumulated excrement of seabirds and bats used as a fertilizer

(A) Gypsum

(B) Galena

(C) Guano

(D) Gladite

37. In a stable nuclide with low atomic number, the number of protons is approximately equal to the number of neutrons, or the neutron to proton ratio, N/Z, is approximately equal to unity. This Rule is called as

(A) Oddo-Harkins Rule

(B) Van der Walls Rule

(C) Symmetry Rule

(D) Ingamell's Rule

38. In _____ , the solid stability area is related to the saturation condition and dominant aqueous species gives fundamental information on sorption and colloidal phenomena as well as surface characteristics of minerals.

(A) Wilcox diagram

(B) Piper diagram

(C) Durov diagram

(D) Eh-pH diagram

39. Uraninite and Pitchblende

(A) have same chemical composition

(B) have same crystal form

(C) have different chemical composition

(D) occur in beach sands

40. Coal is extracted by Singareni Collieries in which of the following districts of Telangana ?

(A) Mahabubabad – Khammam – Warangal (R) – Mancherial – Rajanna Sircilla – Jagityal

(B) Jayashankar Bhupalapally – Bhadradri Kothagudem – Peddapalle – Mancherial – Kumaram Bheem Asifabad – Khammam

(C) Jayashankar Bhupalapally – Khammam – Rajanna Sircilla – Jangaon – Karimnagar – Bhadradri Kothagudem

(D) Bhadradri Kothagudem – Karimnagar – Jayashankar Bhupalapally – Mancherial – Warangal (U) – Khammam

41. For locating a well point the best method of exploration is

(A) Remote sensing

(B) Seismic method

(C) Electrical Resistivity

(D) Gravity method

42. The bulk of the Indian Pre-cambrian continental crust was formed prior to

(A) 1500 m.y.

(B) 2000 m.y.

(C) 2600 m.y.

(D) 1800 m.y.

43. Granulites are found at the Earth's Surface in two different settings

(A) Exposed in low grade regional metamorphic belts and granites

(B) Exposed in contact metamorphic zones and granites

(C) Exposed in thermal metamorphic belts and basalts

(D) Exposed in high grade regional metamorphic belts and as small xenoliths in basaltic pipes

44. Quaternary era is divided into

(A) Pleistocene and Holocene epochs

(B) Miocene and Pliocene epochs

(C) Eocene and Oligocene epochs

(D) Cretaceous and Palaeocene epochs

45. Rann of Kutch in Gujarat is a

(A) Glacial deposit

(B) Salt desert

(C) Beach sand deposit

(D) Mica deposit

46. _____ spectrum of Electromagnetic Radiation is produced when the material is interposed between source and sensor.

(A) Absorption or transmission

(B) Reflected

(C) Emission

(D) Adsorption

47. The following is the subsystem of GIS Architecture

(A) Data capture

(B) Data storage and retrieval

(C) Data manipulation and analysis

(D) All of the above

48. Nagarjunasagar is a

(A) Gravity dam

(B) Masonry dam

(C) Earth-fill dam

(D) Arch dam

49. Which of the following is not a cause for landslides ?

(A) Slow weathering

(B) Erosion

(C) Earthquake

(D) Surveying

50. Calamine Violet (Yellow blossoms) is an indicator plant for

(A) Copper deposits

(B) Gold deposits

(C) Silver deposits

(D) Zinc deposits

51. In geochemical surveys, elements measured to detect an Ore body are termed as

(A) Pathfinder elements

(B) Associated elements

(C) Indicator elements

(D) Critical elements

52. Match the items in Group – I with those in Group – II :

Group – I	Group – II
a. Cassiterite	i. Ultramafic rocks
b. Ilmenite	ii. Ultramafic and mafic rocks
c. Chromite	iii. Anorthosites
d. Nickeliferous sulfides	iv. S-type K-granites

Codes :

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

53. The combination of geophysical method most suitable for exploration of chromite deposits is

(A) Gravity and electrical methods

(B) Gravity and magnetic methods

(C) Magnetic and electrical methods

(D) Radiometric and electrical methods

54. Match the mineral deposits (Group – I) with the most appropriate geophysical exploration methods (Group – II)

Group – I	Group – II
P. Mineralized Conductive Veins	1. Gravity
Q. Disseminated sulphides	2. Magnetic
R. Massive barytes	3. Induced polarization
S. Kimberlite pipes	4. Resistivity Profiling

(A) P – 4, Q – 3, R – 1, S – 2

(B) P – 4, Q – 2, R – 1, S – 3

(C) P – 2, Q – 1, R – 4, S – 3

(D) P – 3, Q – 1, R – 4, S – 2

55. A successful combination of geophysical methods for exploration of kimberlite pipe is

(A) Radiometric and seismic

(B) Radiometric and magnetic

(C) Magnetic and electromagnetic

(D) Gravity and radiometric

56. The geophysical method for the exploration of disseminated sulfide deposits is

(A) Gravity

(B) Magnetic

(C) Self-Potential

(D) Induced Polarization (IP)

57. Fluorosis is caused due to the presence of _____ in the drinking water.

(A) Fluoride

(B) Nitrate

(C) Arsenic

(D) Mercury

58. Which one of the following is the Ghyben Herzberg relation ?

(A) $z = \frac{\rho_f}{(\rho_s - \rho_f)} h$

(B) $z = \frac{(\rho_s - \rho_f)}{\rho_f} h$

(C) $z = \frac{\rho_f}{(\rho_s - \rho_f)} + h$

(D) $z = \frac{\rho_f}{(\rho_s - \rho_f)} - h$

59. Which one of the following processes is not a glacial process ?

(A) Solifluction

(B) Plucking

(C) Deflation

(D) Striation

60. Erosional Remnants in a Karst topography are termed as

(A) Stacks and Chimneys

(B) Inselbergs and Bornhards

(C) Hums and Pepeino Hills

(D) Monad nocks and Spurs

61. **Assertion (A)** :Adiabatic Lapse Rate refers to non exchange of heat in a parcel of ascending or descending air with its surroundings.

Reason (R) : Heating and Cooling of ascending or descending parcel of air through Compression and expansion without any exchange of heat between the parcel and surrounding atmosphere.

(A) Both A and R are correct and R is a correct explanation of A

(B) Both A and R are correct 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

62. Which one of the following is considered as the convective layer of the atmosphere ?

(A) Troposphere

(B) Stratosphere

(C) Mesosphere

(D) Ionosphere

63. Mangrove forests are also called as

(A) Xerophytes

(B) Boreals

(C) Halophytes

(D) Selvas

64. Kaziranga Sanctuary is known for

(A) Elephants

(B) Rhinoceros

(C) Tigers

(D) Birds

65. Kamet is the highest peak of

(A) Dhauladhar Range

(B) Zaskar Range

(C) Ladakh Range

(D) Karakoram Range

66. Which one of the following is mismatched ?

Coal Producing region	State
(A) Chirmiri	MP
(B) Bokaro	Jharkhand
(C) Talcher	Tamil Nadu
(D) Raniganj	West Bengal

67. Limnic Eruptions occur in

(A) Volcanoes

(B) Lakes

(C) Craters

(D) Springs

68. P and S waves are referred to as

(A) Surface waves

(B) Interior waves

(C) Body waves

(D) Rayleigh waves

69. A filter using past output values for the current output is called

(A) Discrete filter

(B) Continuous filter

(C) Recursive filter

(D) Non-recursive filter

70. Convolution of two functions means rotating one function at an angle of

(A) 90^o

(B) 180^o

(C) 270^o

(D) 360^o

71. In free space, the Poisson's equation becomes

(A) Maxwell equation

(B) Ampere equation

(C) Laplace equation

(D) Steady State equation

72. Green's theorem is a special case of

(A) Prime number theorem

(B) Kelvin-Strokes theorem

(C) Helmholtz's theorem

(D) Fermat's Little theorem

73. For a definite integral of any third order polynomial, the two point Gauss Quadrature rule will give the same result as the

(A) 1 – segment trapezoidal rule

(B) 2 – segment trapezoidal rule

(C) 3 – segment trapezoidal rule

(D) Simpson's 1/3 rule

74. Finite element method formulation of problem results in a system of

(A) Differential equation

(B) Algebric equation

(C) Arithmatic equation

(D) Laplace's equation

75. The change in gravity caused by Earth's tides on the land surface in a complete tidal cycle is in the range of (in milligal)

(A) 0.2 to 0.3

(B) 0.3 to 0.4

(C) 0.4 to 0.5

(D) 0.5 to 0.6

76. Clairaut's theorem relates the sum of geometrical and gravitational flattening to the

(A) Equatorial force of gravity

(B) Equatorial centrifugal force

(C) Ratio of equatorial force of gravity and equatorial centrifugal force

(D) Ratio of equatorial centrifugal force to equatorial force of gravity

77. How many types of triple junctions are present during the present phase of plate tectonics ?

(A) 4 (B) 6

(C) 8 (D) 10

78. Vine-Matthew's hypothesis explains

(A) Origin of Solar system

(B) Origin of Earth's Magnetic field

(C) Formation of magnetic lineations

(D) Isostacy

79. One of the dams associated with reservoir induced seismicity is situated across the

(A) Koyana river

(B) Krishna river

(C) Kaveri river

(D) Godavari river

80. On Richter scale a "6" means tremor is 10 times greater than a scale of

(A) 3 (B) 4

(C) 5 (D) 2

81. **Assertion (A)** : Earth's magnetic field is measured using a magnetometer.

Reason (R) : Proton Precession Magnetometer can be used to measure vertical component of Earth's magnetic field.

(A) Both 'A' and 'R' are true

(B) 'A' is true but 'R' is false

(C) 'A' is false but 'R' is true

(D) Both 'A' and 'R' are false

82. Application of Reduction to Pole (RTP) to a magnetic anomaly results in

(A) Transforming the asymmetry in the anomaly to symmetry

(B) Flattening the anomaly curve

(C) Doubling the amplitude

(D) Halving the amplitude

83. Which of the following methods is best suited to estimate the resistivity variations in the upper mantle ?

(A) Magnetotellurics

(B) GPR – Ground Penetrating Radar

(C) Controlled source electromagnetics

(D) Deep electrical resistivity

84. Match the EM methods in Group – I with the corresponding quantity measured by them in Group – II :

Group – I	Group II
P. VLF	1. Amplitude ratio and phase difference
Q. Two-frame	2. Real and imaginary
R. Slingram	3. Dip angle
S. TURAM	4. Amplitude ratio

(A) P – 3, Q – 4, R – 2, S – 1

(B) P – 2, Q – 4, R – 3, S – 1

(C) P – 2, Q – 3, R – 4, S – 1

(D) P – 3, Q – 4, R – 1, S – 2

85. A seismic recording unit uses a 16-bit A/D converter with one sign bit. It also uses binary gain ranging amplifiers. The dynamic range available with such a system is

(A) 96 dB

(B) 90 dB

(C) 180 dB

(D) 192 dB

86. In seismic reflection prospecting, random noise is removed by geophone grouping and

(A) deconvolution

(B) f-k filtering

(C) wiener filtering

(D) stacking

87. A uranium deposit is exposed on the surface. The emitted α particles can travel in air up to

(A) 1 – meter

(B) 10 meter

(C) 20 cm

(D) 100 meter

88. Which of the following logging techniques is best suited to estimate the shalines of hydrocarbon reservoirs ?

(A) Sonic

(B) Resistivity

(C) Gamma-ray

(D) Induction

89. The albedo of the Vegetation

(A) decreases with wavelength between 0.4 and 0.9

(B) increases with wavelength between 0.4 and 0.9

(C) increases with wavelength between 1.0 and 1.6

(D) decreases with wavelength between 1.0 and 1.6

90. The Divergence of a geostrophic wind is

(A) zero

(B) one

(C) infinity

(D) none of the above

91. In Meteorology the most significant waves are

(A) Gravity waves

(B) Electromagnetic waves

(C) Sound waves

(D) Rossly waves

92. In the spectral representation on a sphere, if n = 5 and the zonal waves are three, then the number of nodes in the Y - direction would be

(A) 1

(B) 2

(C) 3

(D) 4

93. The oscillations that operate predominantly in the tropics in the East-West direction are

(A) Quasi Biennial Oscillations

(B) Madden Julian Oscillations

(C) Inertial Oscillations

(D) El-Nino Southern Oscillation

94. The decreasing number of Monsoon depressions during the South West Monsoon season over the Indian sub continent is due to

(A) weakening of the tropical easterly jet

(B) strengthening of the tropical easterly jet

(C) weakening of the Somali jet

(D) strengthening of the Somali jet

95. Which of the following statement is true ? In aviation meteorology the take off and landing of the aircraft will be

(A) Against the wind direction

(B) Towards the same direction of the wind

(C) Take off towards the wind and landing against the wind

(D) Take off against the wind and landing towards the wind

96. The up welling in an Ocean can be identified by

(A) Measuring the wind

(B) Colour of the Ocean

(C) Wave height in the Ocean

(D) Measuring the Chlorophyll

97. TSUNAMIS are long waves which travel at the speed of

(A) 200 kmph

(B) 400 kmph

(C) 800 kmph

(D) 50 kmph

98. Rip Currents essentially form due to beaches with

(A) Breaking waves

(B) High tide waves

(C) Tidal waves

(D) Storm surges

99. The rise of the sea level is mainly due to

(A) Swell waves

(B) Increase in the Rainfall

(C) Depletion of the continent

(D) Melting of Glaciers

100. Match the following :

a. Froude Number	1. $\frac{u}{\sqrt{Hg}}$
b. Reynold's number	2. $\frac{UL}{\nu}$
c. Richardson's Number	3. $\frac{gp}{(\partial u / \partial z)^2}$
d. Rossly number	4. $\frac{v}{fL}$

Codes :

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

Space for Rough Work