SUBJECT CODE	SUB	JECT	PAPER			
C-08-17	EARTH S	CIENCE	SIII			
HALL TICK	ET NUMBER	QUESTION	QUESTION BOOKLET NUMBER			
DURATION 2 Hour 30 Minutes	150	300269 NUMBER OF PAGES 12 NUMBER OF QUESTIONS 75 ortion are correctly written and verified.				
Candidate's Signature Name and Signature of Invigilator						
 Write your Hall Ticket Num top of this page. This paper consists of seve questions. At the commencement of ex will be given to you. In the fito open the booklet and below: 	R THE CANDIDATES ber in the space provided on the nty five multiple-choice type of amination, the question booklet irst 5 minutes, you are requested compulsorily examine it as Question Booklet, tear off the	 ఈ పుట పై భాగంలో ఇవ్వబడి: ఈ డ్రత్న పత్రము డెఖైఐడు లభ పరీక్ష (పారంభమున ఈ డ్రత్సాపిత్రము నిమిషములలో ఈ డ్రత్సాపుత్రము నరిచూసుకోండి. ఈ డ్రత్న పత్రమును చూ చించండి. స్టిక్కర్ సీలులేని 	పరీక్ష ప్రారంభమున ఈ ప్రక్నాప్రతము మీకు ఇవ్వబడుతుంది. మొదటి ఐదు నిమిషములలో ఈ <u>ప్రక్నాప్రతమును తెరిచి కింద తెలిపిన అంశాలను తప్పనిసరిగా</u> నరిచూసుకోండి.			

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.

paper seal on the edge of this cover page. Do not

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(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) 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 in the OMR Answer Sheet, it will not be evaluated.

Read instructions given inside carefully.

Rough Work is to be done in the end of this booklet.

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.

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.

మీరు అంగేకరించవద్దు.

కవరు పేజి పై ముద్రించిన సమాచారం ప్రకారం ఈ ప్రశ్నప్రశములోని పేజీల సంఖ్యను మరియు మ్రక్నల సంఖ్యను సరిచూసుకోండి. పేజీల సంఖ్యకు సంబంధించి గానీ లేదా సూచించిన సంఖ్యలో (ప్రత్నలు లేకపోవుట లేదా నిజప్రతి కాకపోవుట లేదా ప్రశ్నలు క్రమపద్ధతిలో లేకపోవుట లేదా ఏవైనా తేదాలుందుట వంటి దోషపూరితమైన ప్రశ్న ప్రశాన్ని వెంటనే మొదటి ఐదు నిమిషాల్లో పరీక్షా పర్యవేక్షకునికి తిరిగి ఇచ్చివేసి దానికి ఐదులుగా సరిగ్గా ఉన్న ప్రశ్నప్రతాన్ని తీసుకోండి. తదనంతరం ప్రశ్నప్రతము మార్చబడదు అదనపు సమయం ఇవ్వదిడదు.

(iii) పై విధంగా సరిచూసుకొన్న తర్వాత బ్రహ్నాష్త్రం సంఖ్యను OMR ప్రతము పై అదేవిధంగా OMR పత్రము సంఖ్యను ఈ (ప్రశ్నాప్యతము పై నిర్ధిష్టస్థలంలో రాయవలైను.

ప్రతి ప్రశ్నకు నాలుగు ప్రత్యామ్నాయ ప్రతిస్పందనలు (A), (B), (C) మరియు (D) లుగా ఇవ్వబడ్డాయి. (పతి (పశ్చకు సరైన (పతిస్పందనను ఎన్నుకొని కింద తెలిపిన విధంగా OMR పత్రములో ప్రతి ప్రశ్నా సంఖ్యకు ఇవ్వబడిన నాలుగు వృత్తాల్లో సరైన (పఠిస్పందనను సూచించే వృత్తాన్ని బాల్ పాయింట్ పెన్**తా్** కింద **ತಿಲಿಪಿನ ವಿಧಂಗಾ పూರಿಂಪಾಶಿ**.

ఉదాహారణ : (A) (B) ((C) సరైన (పరిస్పందన అయితే

(పశ్నలకు (పతిస్పందనలను ఈ (పశ్నప(తముతో ఇవ్వబడిన OMR ప(తము పైన ఇవ్వబడిన వృత్తాల్లోనే పూరించి గుర్తించాలి. అలాకాక సమాధాన ప్రతంపై వేరొక చోట గుర్తిస్తే మీ (పఠిస్పందన మూల్యాంకనం చేయబడదు.

్రపశ్న పత్రము లోపల ఇచ్చిన సూచనలను జాగ్రత్తగా చదవండి. చిత్తుపనిని ప్రశ్నపత్రము చివర ఇచ్చిన ఖాళీస్థలములో చేయాలి.

OMR ప్రతము పై నిర్జీత స్థలంలో సూచించవలసిన వివరాలు తప్పించి ఇతర స్థలంలో మీ గుర్తింపును తెలిపే విధంగా మీ పేరు రాయడం గానీ లేదా ఇతర చీహ్నాలను పెట్టడం గానీ చేసినట్లయితే మీ అనర్హతకు మీరే బాధ్యులవుతారు.

పరీక్ష పూర్తయిన తర్వాత మీ OMR పట్రాన్ని తప్పనిసరిగా పరీక్ష పర్యవేక్షకుడికి ఇవ్వారి. వాటిని పరీక్ష గది బయటకు తీసుకువెళ్లకూడదు. పరీక్ష పూర్తయిన తరువాత అభ్యర్థులు ప్రశ్న ప్రతాన్ని, OMR ప్రతం యొక్క కార్బన్ కాపీని తీసుకువెళ్లవచ్చు.

10. నీరి/నల్ల రంగు బాల్ పాయింట్ పెన్ మాత్రమే ఉపయోగించారి.

11. లాగరిథమ్ టేబుల్స్, క్యాలిక్యులేటర్లు, ఎల్మక్టానిక్ పరికరాలు మొదలగునవి పరీక్షగదిలో ఉపయోగించడం నిషేధం.

12. తప్పు సమాధానాలకు మార్శుల తగ్గింపు లేదు.

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EARTH SCIENCES

Paper - III

1.	Satellite used by global positioning
	systems is, normally at an altitude of
	about:

- (A) 16,000 km
- (B) 20,000 km
- (C) 24,000 km
- (D) 28,000 km

2. Reflectance, which follows Snell's law, froms a surface is called:

- (A) Specular reflection
- (B) Spectral reflection
- (C) Plankton's reflection
- (D) Peculiar reflection

3. Which of the following engineering structures is located on river Krishna?

- (a) Nagarjunasagar dam
- (b) Bhakra dam
- (c) Srisailam dam
- (d) Prakasam barrage
- (A) (a)
- (B) (b) and (c)
- (C) (a), (c) and (d)
- (D) (b) and (d)

4. Which of the following tunnels is most stable?

- (a) Tunnel located in massive and unweathered granite
- (b) Tunnel located in an anticline
- (c) Tunnel located in a syncline
- (d) Tunnel located in shear zone
- (A) (a)
- (B) (b)
- (C) (c)
- (D) (d)

- 5. _____ is the concentration of an indicator element above which a sample is considered anomalous.
 - (A) Threshold
 - (B) Negative anomaly
 - (C) Dispersion
 - (D) Normal Back ground Value

6. Estimation of Tonnage of mineral deposits is evaluated with:

- (A) Reconnaissance surveys
- (B) Geochemical surveys
- (C) Remote sensing studies
- (D) Weight of ore and volume of ore

7. A saturated but relatively impermeable material that does not yield appreciable quantities of water is known as:

- (A) Confined Aquifer
- (B) Aquiclude
- (C) Unconfined Aquifer
- (D) Aquifuge

8. Excessive Nitrate concentrations in drinking water causes:

- (A) Fluorosis (Dental)
- (B) Methemoglobinemia
- (C) Fluorosis (Skeletal)
- (D) Skin Allergies

9. Soil creep on a gentle slope in a glaciated environment is known as:

- (A) Deflation
- (B) Solifluction
- (C) Abrasion
- (D) Nivation



- 10. Energy radiated into space by Sun at a steady rate is known as:
 - (A) Albedo
- (B) Diffusion
- (C) Solar Constant (D) Solar flare
- 11. Match the following:

Tree	Forest	Cover	Type
			· -

- (a) Sal
- (i) Coniferous
- (b) Pine
- (ii) Tropical Deciduous
- (c) Teak
- (iii) Desert
- (d) Cactus
- (iv) Tropical Monsoon

Codes:

- (a) (b) (c) (d)
- (A) (i) (ii) (iii) (iv)
- (B) (iv) (i) (ii) (iii)
- (C) (ii) (i) (iv) (iii)
- (D) (iii) (i) (ii) (iv)
- 12. When the average annual rainfall is 25% less than usual, then it is known as:
 - (A) Hydrological Drought
 - (B) Meteorological Drought
 - (C) Agricultural Drought
 - (D) Ecological Drought
- 13. Simla hills are located in:
 - (A) Dhauladhar Range
 - (B) Himachal Range
 - (C) Siwalik Range
 - (D) Kumaon Range

- 14. The characteristic mineral of charnockites is:
 - (A) Olivine
 - (B) Biotite
 - (C) Hypersthene
 - (D) Hornblende
- 15. Which one of the following mineral assemblages indicates quartz-albitemuscovite-chlorite sub-facies metamorphism of a basic schist?
 - (A) Quartz-albite-muscovite
 - (B) Calcite-epidote-tremolite-quartz
 - (C) Albite-epidote-chlorite-calcite
 - (D) Quartz-muscovite-chlorite-albite
- 16. The change in either quality or quantity of the color of a mineral on rotation of microscope stage under polarized light is called:
 - (A) Polarization color
 - (B) Pleochroism
 - (C) Extinction
 - (D) Twin bling
- 17. The stress ellipsoid of hydrostatic stress is defined by:
 - (A) $\sigma 1 = \sigma 2 = \sigma 3$
 - (B) $\sigma 1 > \sigma 2 = \sigma 3$
 - (C) $\sigma 1 \leq \sigma 2 \leq \sigma 3$
 - (D) $\sigma 1 > \sigma 2 < \sigma 3$

- 18. The surface defined by connecting all the hinge lines of stacked fold surfaces is called:
 - (A) Fold hinge surface
 - (B) Axial surface
 - (C) Axial plane
 - (D) Axial trace
- 19. Concentric folds are folds repeated in depth in which thickness of all the layers:
 - (A) has increased at the crests and decreased at the limbs
 - (B) has decreased at the crests and increased at the limbs
 - (C) has remained constant
 - (D) has decreased throughout the sequence
- 20. Glossopteris and gangamopteris are the plant fossils of:
 - (A) Gondwana system
 - (B) Cuddapah system
 - (C) Dharwar system
 - (D) Siwalik system
- 21. An example of echinoid is:
 - (A) Paradoxides
- (B) Conus
- (C) Lamellibranch (D) Micraster

- 22. Which one of the following pairs is not correctly matched?
 - (A) Fossils with restricted time but wide distribution are called ______ Index fossils.
 - (B) Vertibrates give birth to _____ Live babies.
 - (C) Clock-wise coiling in gastropods is called ______ sinistral.
 - (D) Siwalik period is considered to be the age of _____ Mammals.
- 23. Breccia and conglomerate belong to:
 - (A) Transitional facies
 - (B) Marine facies
 - (C) Continental facies
 - (D) Transitional and marine facies
- 24. When the beds lying below and above the surface of erosion or non-deposition are almost parallel, the unconformity is known as:
 - (A) Angular unconformity
 - (B) Non conformity
 - (C) Disconformity
 - (D) Local unconformity
- 25. Gondwana formations in Telangana region host rich deposits of:
 - (A) Gold
- (B) Bauxite
- (C) Baryte
- (D) Coal



26.	When oxygen is so depleted in an aquatic environment that virtually ceased all the aerobic biological activity in a mass of water, the environment is known as:							
	(A)	Oxic environment						
	(B)	El Nino						
	(C)	Anoxic enviro	nment					
	(D)	La Nina						
27.	Earth's great oceanic conveyor belt carries:							
	(A)	Thermal Sign	atures	}				
	(B)	Acoustic Signatures						
	(C)	Paleo curren	Signatures	•				
	(D)	Geochemical	Signatures	33.				
28.		rich marine i ules are forme	esource polymetal l:	lic				
	(A)	due to weath	ering					
	(B)	on the sea bo	ttom	ļ				
	(C)	due to volconic eruptions						
	(D)	on the contin	ental crust	34				
29.		silicate mine dily for :	rals Sr substitut	es				
	(A)	Fe	(B) Mg					
	(C)	$^{\circ}\mathbf{Zr}$	(D) Ca					
				35				
30.		l in the blar tamorphic read	k in the followi	ng				
	Muscovite + $\phantom{aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa$							
	(A)	Nepheline	(B) Quartz					

1.	Which one of the following is correctly matched?						
	(A)	Lithophile elements have strong affinity for O and Si.					
	(B)	Au has strong affinity forOxygen.					
	(C)	SMOW means same mean oceanic water.					
	(D)	Apalite fractionates HREE.					
32.		ghbhum copper deposit is entrated in:					
	(A)	Stock work (B) Shear zone					
	(C)	Ladder vein (D) Saddle reef					
33.	Sublimation is a process related to:						
	(A)	Palingenesis					
	(B)	Ore mineralization					
	(C)	Doliomorphism					
	(D)	Diaphthoresis					
34.	Kot	hagudem coal is formed during the :					
	(A)	Archaen					
	, ,	Siwalik					
	(C)	Gondwana					
	(D)	Proterozoic					
35.		e boundary between Western and stern Dharwar Cratons is marked					
	(A)	Closepet granite					
	(B)	Chitradurga shear zone					
	(C)	Kolar schist belt					

(D) Nellore schist belt

(C)

Sillimanite

(D) Kyanite

- 36. Which one of the following basins | 41. belongs to Mesoproterozoic?
 - (A) Sonrai basin
 - (B) Bijawar basin
 - (C) Cuddapah basin
 - (D) Gwalior basin
- 37. Bababudon greenstone belt is located in craton.
 - (A) EDC (Eastern Dharwar Craton)
 - (B) WDC (Western Dharwar Craton)
 - (C) BC (Bastar Craton)
 - (D) AC (Aravalli Craton)
- 38. Pleistocene and Holocene Epochs belong to:
 - (A) Neocene period
 - (B) Oligocene period
 - (C) Quaternary period
 - (D) Miocene period
- 39. Ice Age is usually referred to:
 - (A) Quaternary period
 - (B) Neocene period
 - (C) Cretaceous period
 - (D) Paleocene period
- 40. The ratio of ¹⁸O and ¹⁶O isotopes reveals information on variations in:
 - (A) Sea floor spreading
 - (B) Diagenesis
 - (C) Plate movements
 - (D) Earth's climate

- 41. Non-linear difference equations are solved by:
 - (A) Iterative method
 - (B) Cobweb model
 - (C) Phase diagram
 - (D) Power series method
- 42. Which of the following methods is used to restrict the inverse filter to be FIR? H(z) is system function and h(n) is impulse:
 - (A) truncating h₁(n)
 - (B) expanding h₁(n)
 - (C) truncating H₁(z)
 - (D) expanding $H_1(z)$
- 43. A charge, which, when placed in vacuum from an equal and similar charge repels with a force of 9×10^3 N, is known as:
 - (A) coulomb
 - (B) milli coulomb
 - (C) micro coulomb
 - (D) pico coulomb
- 44. "Total flux through any closed surface surrounding charges is equal to the amount of charge enclosed" is:
 - (A) Coulomb's square law
 - (B) Gauss's law
 - (C) Maxwell's first law
 - (D) Maxwell's second law



- 45. In pattern recognition technique clustering is associated by:
 - supervised learning (A)
 - (B) unsupervised learning
 - (C) semi supervised learning
 - (D) multi-stage learning
- 46. Which of the following is not an example of global approximation?
 - Response surface methodology
 - Design and experiment of computer experiments
 - (C) Neural network
 - (D) Higher order approximation
- 47. What was the relationship between South America and Africa during the time the two polar wandering curves over lapped?
 - (A) South America and Africa moved in different directions
 - (B) South America and Africa have never been joined
 - (C) South America and Africa were joined but not moving
 - (D) South America and Africa were joined and were moving
- Temperature at core can be as high as:
 - 2550°C (A)
- 2300°C
- 3700°C (C)
- 3300°C

- Dominant mechanism of permanent 49. magnetisation of iron-titanium oxide minerals contributing to marine magnetic anomalies is:
 - (A) Chemical remanent magnetisation
 - (B) Thermo remanent magnetization
 - (C) Viscous remanent magnetisation
 - (D) Detrital remanent magnetisation
- Which one of the following is not helpful **50**. in characterizing plate boundaries?
 - (A) Vocanism
 - (B) High thermal gradients
 - (C) Earthquakes
 - (D) Mean sea level
- Earthquake shear wave velocity 51. depends only on :
 - (A) Bulk modulus
 - Shear modulus
 - (C) Bulk modulus and density
 - (D) Shear modulus and density
- The output of a geophone is proportional **52.** to ground ___
 - Displacement (B) Velocity (A)
- - (C) Acceleration
- (D) Strain
- Which one of the following statements 53. is not correct?
 - (A) Eotvos correction is applied for airborne and shipborne gravity survey
 - Free-air and Bouguer correction (B) are always opposite
 - Lacoste Romberg gravimeter is (C) a stable gravimeter
 - Terrain correction is always (D) positive for land gravity survey

- 54. Magnetic anomaly is symmetrical and independent of the strike of the body at latitudes of:
 - (A) 0°
- (B) 45°
- (C) 90°
- (D) All latitudes
- 55. Match the items in Group I with those in Group II:

Group - I

Group - II

- (a) VLF
- (i) 10^{-4} to 1 Hz
- (b) GPR
- (ii) 400 to 2000 Hz
- (c) MT
- (iii) 20 KHz to 25 KHz
- (d) Slingram (iv) 25 MHz to 1.2 GHz

Codes:

- (a) (b) (c) (d)
- (A) (ii) (i) (iv) (iii)
- (B) (iii) (iv) (i) (ii)
- (C) (i) (iv) (iii) (ii)
- (D) (iii) (ii) (iv)
- 56. The correct sequence in which the following EM methods should be arranged in order of their increasing depth of investigation is _____
 - P Very Low Frequency Method
 - ${\bf Q}$ Magnetotelluric Method
 - R Ground Penetrating Radar Method
 - S Slingram Method
 - (A) P < R < S < Q
 - $(B) \quad S < R < P < Q$
 - $(C) \quad R < P < S < Q$
 - (D) P < R < Q < S

- 57. Which one of the following seismic features indicates presence of hydrocarbon but not the lithological boundary?
 - (A) Chaotic reflections
 - (B) Dim spot
 - (C) Flat spot
 - (D) Polarity reversel
- 58. Seismic phases which are recorded in the shadow zones are:
 - (A) PcP
- (B) PmP
- (C) PKIKP
- (D) PKKP
- **59.** Which of the following is the **correct** statement?
 - (A) Gas and oil contact is assessed by Induction log
 - (B) Density is determined by Gamma-Gamma log
 - (C) Cavity is located by self-potential log
 - (D) Shale and Sand boundary is demarcated by microlog
- 60. Which combination of logs is used to identify a gas zone based on the characteristic shape of the derived porosity plots?
 - (A) Sonic and density
 - (B) Resistivity and density
 - (C) Density and neutron
 - (D) Sonic and neutron



61.	T-S diagrams of Indian ocean have identified number of water masses.			66.	Albedo over a fresh snow cover is about%.				
	(A) 8		(B)	5		(A)	50	(B)	7 5
	,	10	(D)	12		(C)	95	(D)	30
62.	The Agulhas current retroflects to flow eastwards in response to the change in vorticity.			67.	Forecasting of Thunderstorm activity is in the range category.				
	(A)	Potential	(B)	Planetary		(A)	Short	(B)	Medium
	(C)	Relative	(D)	Absolute		(C)	Long	. (D)	Now cast
63.	In oc	In ocean, carbon dioxide dissolution rate decreases with:			68.	Don	mlar Radai	r measilres	the intensity
	(A) increasing wind speed(B) increasing unbalance			00.	Doppler Radar measures the intensity of Hailstorm, Tornedo and Rain rate with sensor.				
	(C)	increasing ten	iperat	ure		(A)	Active m	nicrowave	
	(D)	increasing pre	ssure			(B)	Passive	microwave	
64.	Sliding of seafloor beneath a continent or island arc is known as:				(C)	Visible			
	(A)				Subduction	(D)	Infrared	•	
	(C)	Obliteration	(D)						
	(0)	0,022002	(,		69.	Th		e between _	
65.	The	The surface layer of ocean where there					ticity.	vorticities	is planetary
69.	is sufficient light for photosynthesis is called:				(A)		e		
	(A)	Areal zone				(B)) Relative	2	
	(B)	Safe zone					_		
	(C)	Photic zone				(C)) Angulai	r	
	(D)	Synthetic zon	ıe			(D) Both (A) and (B)	

- Coral reef developed along the margins of a volcano is called: (A) sea mount (B) a toll (C) barrier reef (D) fringing reef 71. The occurrence of ENSO is in the period range of _____ years. (A) 2 - 5 (B) 5-7 (C) 7-9 (D) 10 - 12 72. Mean height of somalijet in the southwest monsoon season is ____ km. (A) 2.8 (B) 5.2 (C) 10.5 (D) 16.1 73. Which of the following is not a terrestrial planet? (A) Mercury (B) Venus (C) Earth (D) Jupiter 74. Which one of the following processes reduces carbon in atmosphere and helps in climate change mitigation? (A) Pyrolysis Automobile emission (C) Use of natural resources
- 75. Chlorophyll of the ocean is measured by the _____ satellite.
 (A) Oceansat 2
 (B) Kalpana
 (C) TIROS-I
 (D) NIMBVS-II

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(D) Photosynthesis

Space For Rough Work