

Test Paper : III
 Test Subject : EARTH SCIENCE
 Test Subject Code : K-3213

Test Booklet Serial No. : _____
 OMR Sheet No. : _____
 Roll No.

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 (Figures as per admission card)

Name & Signature of Invigilator/s
 Signature: _____ Name : _____
 Signature: _____ Name : _____

Paper : III
Subject : EARTH SCIENCE

Time : 2 Hours 30 Minutes Maximum Marks : 150

Number of Pages in this Booklet : 8 Number of Questions in this Booklet : 75

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಎಪ್ಪತ್ತೈದು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರಿಶೀಲಿಸಲು ಕೋರಲಾಗಿದೆ.
 - ಪ್ರಶ್ನೆಪುಸ್ತಕದ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ವಿಚ್ ಸೀಲ್ ಇಲ್ಲದ ಪ್ರಶ್ನೆಪುಸ್ತಕ ಸ್ವೀಕರಿಸಬೇಡಿ. ತೆರೆದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
 - ಪುಸ್ತಕದಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೂಡಲೇ ನಿರಾಸದ ಆವಧಿ ಒಳಗೆ, ಸಂವಿಧಾನದಿಂದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- 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	C	D
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 (C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆಗಳಿಗೆ ಉತ್ತರಗಳನ್ನು ಪತ್ರಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಯೊಳಗೆ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಮಾತ್ರವೇ ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿನ ಅಂಡಾಕೃತಿ ಹೊರತುಪಡಿಸಿ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕವು ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರೆದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವಿಧಾನದಿಂದ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯ ಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿಯು ಉಪಯೋಗವನ್ನು ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of seventy five multiple-choice type of questions.
- 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 :
 - 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.
 - 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.**
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the oval as indicated below on the correct response against each item.
Example :

A	B	C	D
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 where (C) is the correct response.
- Your responses to the question of Paper III are to be indicated in the **OMR Sheet kept inside the Booklet**. If you mark at any place other than in the ovals in OMR Answer Sheet, it will not be evaluated.
- Read the instructions given in OMR 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.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination.
- Use only Blue/Black Ball point pen.**
- Use of any calculator or log table etc., is prohibited.**
- There is no negative marks for incorrect answers.**



EARTH SCIENCE
Paper – III

Note : This paper contains **seventy-five (75)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. In the soil profile the percentage of organic component is more in
(A) Bed rock
(B) Partially weathered portion
(C) Top soil
(D) Sub-soil
2. Stream which flows in the opposite direction to the original consequent streams is described as
(A) Obsequent (B) Subsequent
(C) Insequent (D) Resequent
3. 'Natural levee' is an example of
(A) Point-bar deposits
(B) Channel-fill deposits
(C) Flood plain deposits
(D) Flood basin deposits
4. Which of the following is a feature exhibited by a river in its upper course ?
(A) Meanders (B) River-Piracy
(C) Piedmont (D) Sloughs
5. In which of the following sedimentary environments would you least expect to find gravel ?
(A) Alluvial fans
(B) Deep marine
(C) Glacial
(D) Active margin beach
6. Which of the following types of sediments are most abundant ?
(A) Coarse clastics
(B) Fine clastics
(C) Chemical
(D) Biochemical
7. A sandstone with abundant rock fragments and clay minerals is called
(A) Arkose (B) Lith arenite
(C) Quartz arenite (D) Shale
8. An irregular suture like boundary developed in some limestone, along which the non-carbonate impurities may collect, formed by pressure solution process is called
(A) Stylolite (B) Inversion
(C) Overgrowth (D) Septaria
9. In order that a organism or plant becomes fossil it must possess
(A) Endoskeleton (B) Soft parts
(C) Visceral mass (D) Pallial sinus
10. Fenestella-a net like Bryozoan that lived from
(A) Silurian – Ordovician
(B) Ordovician – Permian
(C) Precambrian – Cambrian
(D) Jurassic – Recent
11. Stromatolites are
(A) Green algae
(B) Blue algae
(C) Organo-sedimentary structures
(D) Sedimentary structures
12. Polyp and medusa are the terms associated with
(A) Trilobites (B) Bryozoans
(C) Corals (D) Ammonoids
13. Most periods in geological time scale are named after
(A) Fossils
(B) Catastrophic events
(C) Geographic localities
(D) Paleontologists



Total Number of P

14. A stratigraphic sequence is a vertical set of strata
 (A) Used as a chronological record of the geologic history of a region
 (B) That represents a repeating set of events such as recurring floods, debris flow etc.
 (C) Bounded above and below by igneous and or metamorphic rocks
 (D) That is unique to a specific area
15. Which of the following is called the age of Fishes ?
 (A) Cambrian (B) Devonian
 (C) Ordovician (D) Silurian
16. Strike slip faults show the rake of
 (A) 45° (B) 0°
 (C) 90° (D) $0^\circ - 90^\circ$
17. _____ fold forms when a competent bed slides past an incompetent bed.
 (A) Tight (B) Drag
 (C) Chevron (D) Arch-bend
18. Which of the following show the effect of tensional forces ?
 1) Columnar joints
 2) Mud cracks
 3) Graben
 4) Bedding joints
 (A) 1 and 2 only
 (B) 1 and 3 only
 (C) 1, 2 and 3 only
 (D) 1, 2, 3 and 4
19. The fault in which the hanging wall has gone down relative to the foot wall is known as
 (A) Normal fault
 (B) Reverse fault
 (C) Transcurrent fault
 (D) Strike slip fault
20. Uvarovite is a type of
 (A) Mica (B) Olivine
 (C) Garnet (D) Pyroxene
21. Which of the following mineral is polymorph of silica ?
 (A) Stevensite (B) Brucite
 (C) Coesite (D) Indialite
22. Crystals having a single 3-fold or 6-fold axis belong to _____ crystal system.
 (A) Cubic (B) Orthorhombic
 (C) Tetragonal (D) Hexagonal
23. Amongst the silicates pyroxenes belong to
 (A) Orthosilicates
 (B) Sorosilicates
 (C) Chain silicates
 (D) Sheet silicates
24. Chondrites are consisting primarily of
 (A) Olivine only
 (B) Pyroxene only
 (C) Olivine and/or pyroxene
 (D) Iron and Nickel
25. Different elements with the same neutron number but with different values of atomic weight and protons are known as
 (A) Isotopes (B) Isobars
 (C) Isotones (D) Isotherm
26. The geochemical character of an element is largely governed by
 (A) Number of neutrons in the nucleus
 (B) Number of proton in the nucleus
 (C) Electronic configuration of its atoms
 (D) Both protons and neutrons
27. Match the following :
 1) Siderophile i) Sulfides
 2) Chalcophile ii) Silicates
 3) Lithophile iii) Metallic ions
 4) Atmosphile iv) Atmospheric compounds
 (A) 1 – ii, 2 – iii, 3 – i, 4 – iv
 (B) 1 – iii, 2 – ii, 3 – iv, 4 – i
 (C) 1 – iii, 2 – i, 3 – ii, 4 – iv
 (D) 1 – iv, 2 – ii, 3 – iii, 4 – i



28. Blue schist metamorphism is characterized by the presence of
(A) Glaucophane (B) Glauconite
(C) Grunerite (D) Wollastonite
29. Mineral assemblage orthopyroxene-clinopyroxene-plagioclase in the basic rocks belong to the following facies
(A) Lower amphibolite
(B) Upper amphibolite
(C) Green schist
(D) Epidote-amphibolite
30. A rock that has undergone cataclastic metamorphism would most likely display the following
(A) Preserved sedimentary layering
(B) Pulverized rock fragments
(C) New minerals
(D) Large olivine crystals
31. What is the most prominent textural feature of regional metamorphic rocks ?
(A) Foliation (B) Bedding
(C) Cataclasis (D) Ripples
32. Rock containing normative quartz and hypersthene is designated as
(A) Quartz – Tholeiite
(B) Olivine – Tholeiite
(C) Alkaline
(D) Sub-alkaline
33. Ore deposits associated with granoblastic aggregate of quartz and muscovite with accessory amounts of topaz, tourmaline and fluorite formed by the post-magmatic metasomatic alteration of granites are referred to as
(A) Greisen deposits
(B) Skarn deposits
(C) Sedex deposits
(D) Kuroko type deposits
34. Naushahi in Singbhum-Orissa-Iron-Craton is known for
(A) Chromite (B) BIF
(C) Manganese (D) Copper
35. Hydrothermal ore deposits are recognised by
i) Wall rock alteration
ii) Vein-type ore bodies
iii) Magmatic host rock
iv) Sedimentary host rock
Which of the above options are always true ?
(A) i and ii (B) i and iii
(C) i and iv (D) ii and iv
36. One of these minerals is commonly not idiomorphic
(A) Pyrite (B) Galena
(C) Magnetite (D) Sphalerite
37. Continental shelf is defined as
(A) The height of the continent from mean sea level
(B) The height difference between two continents
(C) The zone around the continents from the low water mark seaward upto the continental slope
(D) The distance between two continents
38. Almost half of the sediments reaching the oceans comes from
(A) Asia (B) South America
(C) Africa (D) Australia
39. Atolls may be described as
(A) Coral reefs paralleling a nearby coastline
(B) Coral reefs surrounding a lagoon
(C) A flat topped submerged seamount
(D) A small reef growth in a lagoon



40. The highest known waves have occurred
 (A) As the result of earthquakes
 (B) During hurricanes
 (C) After volcanic eruptions
 (D) When landslides dumped large amounts of material into small bodies of water
41. _____ is a mixture of hydrocarbons that exists in the liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.
 (A) Tar (B) Crude oil
 (C) Rock oil (D) Diesel
42. Which of the following do not happen with increasing degree of coalification ?
 i) Increase in fixed carbon
 ii) Increase in calorific value
 iii) Increase in moisture content
 iv) Increase in ash content
 (A) i and ii (B) iii and iv
 (C) i and iii (D) ii and iv
43. In India coking coal is produced from one of the following coal fields
 (A) Singareni (B) Singrauli
 (C) Talchir (D) Jharia
44. 'Oil Window' refers to
 (A) Oil deposits situated at shallow depth
 (B) Oil deposits situated at great depth
 (C) P, T condition under which oil is formed
 (D) Host rock in which oil is formed
45. In the Dharwar craton grade of metamorphism
 (A) Increases from south to north
 (B) Increases from east to west
 (C) Increases from west to east
 (D) Increases from north to south
46. Eastern ghats is part of
 (A) Shield area
 (B) Greenstone belt
 (C) Mobile belt
 (D) Sedimentary belt
47. Nilgiri Hills of Tamil Nadu are composed of
 (A) Charnockites
 (B) Amphibolites
 (C) Anorthosites
 (D) Granites
48. The oldest rocks in the world are reported from
 (A) Australia (B) India
 (C) Antarctica (D) Greenland
49. A near-horizontal excavation that is open to the surface at one end only is termed as
 (A) Tunnel
 (B) Shaft
 (C) Adit
 (D) Stopping ground
50. Which one of the following forms good concrete aggregates ?
 (A) Angular fragments of granite with rough surface
 (B) Angular fragments of granite with smooth surface
 (C) Rounded to sub-rounded fragments of granite
 (D) Angular fragments of limestone
51. Following structure is generally preferred in steep and narrow valley regions
 (A) Gravity dam
 (B) Arch dam
 (C) Buttress dam
 (D) Rock fill dam



52. Sorting of grains is generally carried out by
 (A) Jaw Crushers
 (B) Classifiers
 (C) Cone crushers
 (D) Rod mills
53. The most useful drilling for penetrating hard or abrasive ground is
 (A) Diamond drilling
 (B) Percussion drilling
 (C) Rotary drilling
 (D) Churn drilling
54. Which one of the following type of ore deposit and corresponding ore guide is not correctly matched ?
 (A) Lode gold : Arsenic in soil
 (B) Massive sulphide : Gossan capping
 (C) Porphyry copper : Nickel in soil
 (D) Diamond bearing kimberlite : Pyrope garnet
55. Strip mining operation involves
 (A) Removal of the mineralised horizontal strata one by one
 (B) Developing a shaft to reach the mineralised part
 (C) Stopping of steeply dipping ore bodies
 (D) Developing raises and winzes
56. The water occurring in a rock formation was entrapped during the deposition of the rock is called
 (A) Connate water
 (B) Meteoric water
 (C) Juvenile water
 (D) Metamorphic water
57. How much of the Earth's water is stored in underground aquifers ?
 (A) Less than 1% (B) About 5%
 (C) About 10% (D) About 20%
58. According to international norms, a country becomes water stressed when the per capita water availability is less than
 (A) 1000 m³ (B) 1200 m³
 (C) 1700 m³ (D) 1500 m³
59. In an area of 100 ha, the water table dropped by 4.5 m. If the porosity is 30% and specific yield is 20%, change in ground water storage is
 (A) 9 ha.m (B) 90 ha.m
 (C) 900 ha.m (D) 9000 ha.m
60. The point vertically below the camera lenses on the ground is
 (A) Ground point
 (B) Ground nadir point
 (C) Perspective center
 (D) Isocenter
61. Which of the following statements are incorrect ?
 i) 0.4 to 0.5 microns is not a part of the visible band
 ii) 0.7 to 0.8 microns is not a part of the visible band
 iii) Radio waves have the shortest wavelength
 iv) Gamma ray band is also known as intra red band
 (A) i, iii and iv
 (B) ii, iii and iv
 (C) i, ii and iii
 (D) i, ii and iv
62. The largest scale among the following is
 (A) 1 : 24000 (B) 1 : 62500
 (C) 1 : 100000 (D) 1 : 500000
63. Which of the following types of remote sensing would be most useful in obtaining an accurate terrain representation of earth ?
 (A) Radar (B) Microwave
 (C) Landsat (D) Sonar



64. A balance is obtained in one of the following during hydrostatic equilibrium
 (A) Pressure gradient and gravity
 (B) Pressure gradient and Coriolis force
 (C) Coriolis force and gravity
 (D) Coriolis force and friction
65. The lower limit of ionosphere is in the range of
 (A) 40 km – 60 km
 (B) 70 km – 80 km
 (C) 90 km – 100 km
 (D) 110 km – 130 km
66. In which one of the following atmospheric condition the thermal wind is zero ?
 (A) Barotropic (B) Baroclinic
 (C) Neutral (D) Standard
67. During night times radiowaves, are detected at great distances due to changes in
 (A) Mesosphere (B) Stratosphere
 (C) Troposphere (D) Ionosphere
68. If 'T' is the planet's period of orbit and 'a' is the semi major axis of the orbit then the Kepler's law of planetary motion states
 (A) $a = \sqrt{T^3}$ (B) $T^2 = a^3$
 (C) $T = \frac{1}{a^2}$ (D) $a = \frac{1}{3}(T^2)$
69. Which of the following has the least resistivity ?
 (A) Diamond (B) Sulphur
 (C) Clay (D) Anthracite
70. Larmour frequency is associated with
 (A) Proton Precession Magnetometer
 (B) Schmidt's Vertical Magnetometer
 (C) Schmidt's horizontal magnetometer
 (D) Gravimeter
71. Which of the following are assumptions made to compute master curves for vertical resistivity sounding ?
 I) Layers are horizontal
 II) Layers are isotropic and homogeneous
 III) Layers are isotropic and heterogeneous
 IV) Last layer extends till infinity
 (A) I, II, III (B) II, III, IV
 (C) I, II, IV (D) III, IV, II
72. Western boundary currents in the general circulation ocean models are
 (A) Ekman boundary layers
 (B) Stommel boundary layers
 (C) Munk boundary layers
 (D) Sverdrup boundary layers
73. Salinity of water in an Estuary is reduced due to
 (A) Sea water intrusion
 (B) Evaporation of water
 (C) Incursion of tidal current
 (D) Fresh water input
74. Sediments are transported in large volumes over long distances by
 (A) Tidal action
 (B) Ice bergs
 (C) Storm waves
 (D) Turbidity currents
75. The name of a rapid rise of coastal water that accompanies the arrival of a cyclone is called
 (A) Hurricane
 (B) Storm surge
 (C) Tidal wave
 (D) After shock



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Paper III

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