

2016.

Set No. : 1

Question Booklet No.

RET/16/TEST-B

883

Geology

(To be filled up by the candidate by blue/black ball point pen)

Roll No.

--	--	--	--	--	--	--	--	--	--

Roll No. (Write the digits in words)

Serial No. of OMR Answer Sheet

Day and Date

(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only blue/black ball-point pen in the space above and on both sides of the Answer Sheet)

1. Within 30 minutes of the issue of the Question Booklet, Please ensure that you have got the correct booklet and it contains all the pages in correct sequence and no page/question is missing. In case of faulty Question Booklet, Bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. *A separate Answer Sheet is given. It should not be folded or mutilated. A second Answer Sheet shall not be provided.*
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. *On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.*
6. *No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and Roll No. and OMR sheet no. on the Question Booklet.*
7. *Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.*
8. *This Booklet contains 40 multiple choice questions followed by 10 short answer questions. For each MCQ, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by pen as mentioned in the guidelines given on the first page of the Answer Sheet. For answering any five short Answer Questions use five Blank pages attached at the end of this Question Booklet.*
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed. If you do not wish to attempt a question, leave all the circles in the corresponding row blank (such question will be awarded zero marks).*
11. For rough work, use the inner back pages of the title cover and the blank page at the end of this Booklet.
12. *Deposit both OMR Answer Sheet and Question Booklet at the end of the Test.*
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

Total No. of Printed Pages : 20

19.

ROUGH WORK

रफ़ कार्य

Research Entrance Test-2016

No. of Questions : 50

प्रश्नों की संख्या : 50

Time : 2 Hours

Full Marks : 200

समय : 2 घण्टे

पूर्णाङ्क : 200

Note: (1) This Question Booklet contains **40** Multiple Choice Questions followed by **10** Short Answer Questions.

इस प्रश्न पुस्तिका में **40** वस्तुनिष्ठ व **10** लघु उत्तरीय प्रश्न हैं।

(2) Attempt as many MCQs as you can. Each MCQ carries **3 (Three)** marks. **1 (One)** mark will be deducted for each incorrect answer. **Zero** mark will be awarded for each unattempted question. If more than one alternative answers of MCQs seem to be approximate to the correct answer, choose the closest one.

अधिकाधिक वस्तुनिष्ठ प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक वस्तुनिष्ठ प्रश्न **3 (तीन)** अंकों का है। प्रत्येक गलत उत्तर के लिए **1 (एक)** अंक काटा जायेगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा। यदि वस्तुनिष्ठ प्रश्नों के एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

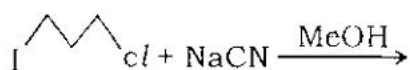
(3) Answer only **5** Short Answer Questions. Each question carries **16 (Sixteen)** marks and should be answered in **150-200** words. Blank **5 (Five)** pages attached with this booklet shall only be used for the purpose. Answer each question on separate page, after writing Question No.

केवल **5 (पाँच)** लघुउत्तरीय प्रश्नों के उत्तर दें। प्रत्येक प्रश्न **16 (सोलह)** अंकों का है तथा उनका उत्तर **150-200** शब्दों के बीच होना चाहिए। इसके लिए इस पुस्तिका में लगे हुए सादे **5 (पाँच)** पृष्ठों का ही उपयोग आवश्यक है। प्रत्येक प्रश्न का उत्तर एक नए पृष्ठ से, प्रश्न संख्या लिखकर शुरू करें।

01. Which is not true for reactions by the S_N2 mechanism ?

- (1) proceeds through a backside attack and results in inversion
- (2) tends to proceed with weak nucleophiles solvents like CH_3OH , H_2O , CH_3CH_2OH .
- (3) rate of reaction proceeds from primary (fastest) > secondary >> tertiary (slowest)
- (4) occurs in one step

02. Which is the main product of the following reaction ?



- | | |
|-----|-----|
| (1) | (2) |
| (3) | (4) |

03. Which of the following conditions is necessary for a reaction to be spontaneous ?

- | | |
|---|---|
| (1) $\Delta S_{sur} > 0$ | (2) $\Delta S_{sys} > 0$ |
| (3) $\Delta S_{sur} + \Delta S_{sys} > 0$ | (4) $\Delta S_{sur} + \Delta S_{sys} < 0$ |

04. Dead organs are generally stored in formalin. Formalin is :

- | | |
|--------------------------|------------------------------|
| (1) aqueous formaldehyde | (2) aqueous ferrous sulphate |
| (3) aqueous formic acid | (4) aqueous ferric alum |

- 05.** Regarding "carbon credits", which one of the following statement is **not** correct :
- (1) The carbon credit system was ratified in conjunction with the Kyoto Protocol.
 - (2) Carbon credits are awarded to countries or groups that have reduced greenhouse gases below their emission quota.
 - (3) The goal of the carbon credit system is to limit the increase of carbon dioxide emission.
 - (4) Carbon credits are traded at a price fixed from time to time by the United Nations Environment Programme.
- 06.** Ball bearings are used in bicycles, cars, etc., because :
- (1) the actual area of contact between the wheel and axle is increased.
 - (2) the effective area of contact between the wheel and axle is increased
 - (3) the effective area of contact between the wheel and axle is reduced
 - (4) the actual area of contact between the wheel and axle is reduced.
- 07.** During respiration, energy is released. It is stored in the form of :
- (1) ADP (2) ATP (3) NADP (4) APP
- 08.** Which of the following is known as Royal disease :
- (1) Sickle cell anemia (2) Haemophilia
(3) Alzheimers disease (4) Colour blindness
- 09.** The xylem in plants is responsible for :
- (1) transport of water (2) transport of food
(3) transport of oxygen (4) transport of amino acids
- 10.** Two wires, of the same material, have their lengths in the ratio 1:2 and their diameters in the ratio 2:1. If both are stretched separately by equal weights, the ratio of increase in their lengths, $L_1 : L_2$ would be :
- (1) 1:2 (2) 2:1 (3) 1:8 (4) 8:1

11. Basalt system in an example of:

- (1) Diopside-anorthite system
- (2) Nepheline Kalsilite-silica system
- (3) Quartz-orthoclase-plagioclase system
- (4) Diopside-calcite-quartz system

(1)

12. Myrmekite texture is:

- (1) Micrographic intergrowth of quartz and plagioclase
- (2) Small scale intergrowth of K-feldspar and Plagioclase
- (3) Large scale intergrowth of K-feldspar and Plagioclase
- (4) Micrographic intergrowth of quartz-plagioclase and K-feldspar

(2)

13. Composition of alkali feldspar syenite is -

- (1) Quartz, plagioclase feldspar and alkali feldspar
- (2) Quartz and plagioclase feldspar only
- (3) Only alkali feldspar
- (4) Quartz and alkali feldspar only

(2)

14. Depleted mantle, HIMU mantle and Enriched mantle are :

- (1) Crustal reservoir
- (2) Crust-mantle reservoir
- (3) Mantle reservoir
- (4) Lower crustal reservoir

(3)

15. The process which incorporates the sedimentary history of the fossils is known as:

- (1) Lithification
- (2) Compaction
- (3) Necrolysis
- (4) Biosratotomy

(1)

16. Burrow can be made in:

- (1) Any type of substrate
- (2) Hard substrate only
- (3) Soft substrate only
- (4) In hardgrounds only

(3)

17. Select a phosphatic microfossil from the following :
(1) Conodont (1) (2) Foraminifer
(3) Radiolaria (4) Diatoms
18. How many stages are in the Late Cretaceous ?
(1) 12 (3) (2) 8 (3) 6 (4) 10
19. Suit is a:
(1) Lithostratigraphic unit (2) Lithodemic unit
(3) Pedostratigraphic unit (4) Chronostratigraphic unit
20. Maze is a part of the body of:
(1) Trace fossils (1) (2) Molluscs
(3) Echinoids (4) Brachiopods
21. Quartz arenites contain:
(1) <50% Quartz (4) (2) 50-75% Quartz
(3) 75-95% Quartz (4) >95% Quartz
22. Arkoses are sandstones which contain:
(1) Appreciable amount of feldspar (1)
(2) Low percentage of feldspar
(3) Negligible amount of feldspar
(4) No feldspar
23. Sandstones containing > 15% matrix and <75% quartz are classified as:
(1) Arkose (2) Greywacke
(3) Lithic arenite (2) (4) Quartz arenite
24. Claystones contain:
(1) <33% clay (3) (2) 33-66% clay
(3) >66% clay (4) None
25. Oolites form in:
(1) Agitated water (1) (2) Calm water
(3) Cool water (4) None

26. The fluid pressure

- (1) Decreases both shearing and compressive strengths of the rock
- (2) Decreases only the shearing strength of the rock. 1
- (3) Increases the compressive strength of the rock
- (4) Increases both shearing and compressive strengths of rock

27. If all other conditions are same but the strain rate is increased, the deformational behaviour of the rock will be more :

- (1) Ductile 2
- (2) Brittle
- (3) Elastic
- (4) Plastic

28. If a body of 1 m^2 cross sectional area is buried 5 km deep in continental crust it will experience an approximate compressive stress of :

- (1) 5.18MPa 3
- (2) 18.8 MPa
- (3) 138 MPa
- (4) 1880Mpa

29. Which of the following is NOT correct about homogeneous strain?

- (1) Straight lines become curved after deformation 1
- (2) Parallel lines remain parallel after deformation
- (3) Shape of elements of similar original shape ends up with similar shape
- (4) All lines in same direction in the deformed body have constant values

30. Extension parallel to the length of a competent layer embedded under sufficient thickness of incompetent layer results into :

- (1) Ptygmatic fold 2
- (2) Boudinage
- (3) Drag fold
- (4) Normal fault

31. Which one of the following corresponds to the characters of Andean style plate margin ?
- (1) Convergence of plates and volcanic arcs over continent (1)
 - (2) Convergence of plates and a passive continental margin behind the volcanic island arcs
 - (3) Divergence of plates and mid-oceanic ridges with active volcanoes
 - (4) Transform faults disrupting two plates at mid oceanic ridges and the continents as well.
32. Which one of the following remote sensing satellite sensors is NOT Indian ?
- (1) LISS
 - (2) WIFS
 - (3) MSS (3)
 - (4) AWIFS
33. In a delta-type shear zone :
- (1) the median line does not cross the porphyroblastic tails (2)
 - (2) the median line crosses the porphyroblastic tails
 - (3) a triangular space of no shear is created within the porphyroblasts
 - (4) a triangular space of intense shear is created within the porphyroblasts
34. The general range of P-T conditions of low pressure facies in metamorphism is:
- (1) < 3kbar 300 to 850°C (1)
 - (2) < 1kbar 100 to 650°C
 - (3) > 3kbar 300 to 850°C
 - (4) < 2kbar 500 to 900°C
35. Which one of the following is most widespread reaction for melting in metamorphic rocks ?
- (1) $Qz + bio = opx + L$ (2)
 - (2) $Mus + qz = Kfs + sill + H_2O$
 - (3) $Qz + Kfs + bio = opx + L$
 - (4) $Qz + bio = Kfs + opx + L^2$
36. Eclogites occur in:
- (1) High pressure belts (4)
 - (2) Low pressure belts
 - (3) Intermediate pressure belts
 - (4) Both in high pressure and intermediate pressure belts

37. ACW paths are characteristic of:

- (1) Collisional belts
- (2) Rift settings
- (3) Cratonic settings
- (4) Does not depend on the nature of the tectonic boundary, it is actually controlled by the specific P-T path

38. The classification of low pressure, intermediate pressure and high pressure metamorphic facies is based on:

- (1) Sequence of facies in an area
- (2) P/T gradient
- (3) P/T gradient, texture of the rock and the sequence of facies in an area
- (4) Only on specific mineral assemblage

39. Graphite and diamond are both carbon. The reason for their extreme variation in hardness is :

- (1) Graphite is pure carbon while diamond has some impurities making it harder
- (2) Due to their different crystal structures
- (3) Diamond is pure carbon while graphite is impure making it softer
- (4) Diamond occurs in rocks at very high pressures while graphite is found in rocks closer to the surface of the earth

40. Within a 50 km traverse you walk from shale into a slate into a phyllite. You are walking in the direction of :

- (1) Decreasing metamorphic grade
- (2) Increasing metamorphic grade
- (3) Increasing degree of contact metamorphism
- (4) Decreasing degree of regional metamorphism

Short Answer Questions

Note: Attempt any **five** questions. Write answer in **150-200** words. Each question carries **16** marks. Answer each question on separate page, after writing Question Number.

- 01.** What is hydrothermal deposit? With the help of suitable examples describe the characteristics of telethermal deposits.
- 02.** What do you understand by coalification process? Giving suitable examples, discuss how Gondwana coals differ from the Tertiary Himalayan coals of Indian?
- 03.** Discuss the IUGS chemical classification schemes for volcanic igneous rocks.
- 04.** What is geochronology? Which groups of rock can and which group of rocks cannot be dated using radiometric dating ? Give reasons to support your answer.
- 05.** Discuss the different types of approaches in the palaeoecological investigation.
- 06.** Discuss the various important applications of Remote Sensing in Geology.

- 07.** Discuss the technique of paleocurrent analysis.
- 08.** Discuss the conditions of origin for chocolate tablet structure with the help of strain ellipse diagram.
- 09.** Give reasons why a back arc zone shows extensional stress regime even though it falls in an overall compressive stress regime between two convergent plates.
- 10.** Discuss the application of Schriener's diagrams in petrology.

Question No.

Page for Short Answer

Question No.

Page for Short Answer

Question No.

Page for Short Answer

Question No.

Page for Short Answer

Question No.

Page for Short Answer

ROUGH WORK

रफ़ कार्य

ROUGH WORK

रफ़ कार्य

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली-काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 30 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।
2. परीक्षा भवन में लिफाफा रहित प्रवेश-पत्र के अतिरिक्त, लिखा या सादा कोई भी खुला कागज साथ में न लायें।
3. उत्तर-पत्र अलग से दिया गया है। इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा। केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।
4. अपना अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन से निर्धारित स्थान पर लिखें।
5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।
6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्नपुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्नपुस्तिका पर अनुक्रमांक और ओ० एम० आर० पत्र संख्या की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।
7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।
8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिए आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।
9. प्रत्येक प्रश्न के उत्तर के लिए केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।
10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर नहीं देना चाहते हैं, तो संबंधित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।
11. रफ कार्य के लिए प्रश्न-पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा उत्तर-पुस्तिका के अंतिम पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ एम आर उत्तर-पत्र परीक्षा भवन में जमा कर दें।
13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।
14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।