

(Science)

Set No. : 1

Question Booklet No.

RET/17/TEST-B

883

Geology

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

Roll No.

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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

ROUGH WORK

रफ़ कार्य

Research Entrance Test-2017

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. Booklungs are found in :

- | | |
|--------------|------------------|
| (1) Amoeba | (2) Polystomella |
| (3) Euglypha | (4) Arachnids |

02. Silk is obtained from :

- | | |
|----------------|-----------------------|
| (1) Adult moth | (2) Caterpillar stage |
| (3) Egg | (4) Cocoon |

03. Neurogenic heart is found in :

- | | |
|------------------|-------------------|
| (1) Human beings | (2) Rat |
| (3) Rabbit | (4) Invertebrates |

04. Epiphysis is also known as :

- | | |
|-------------|------------------|
| (1) Pineal | (2) Pituitary |
| (3) Thyroid | (4) Hypothalamus |

05. Simplest and smallest form of amino acid is :

- | | |
|-------------|--------------|
| (1) Glycine | (2) Proline |
| (3) Lysine | (4) Arginine |

06. PCOS is related to :

- | | |
|------------|-------------|
| (1) Ovary | (2) Uterus |
| (3) Testes | (4) Oviduct |

07. Seminogelin is secreted by :

- | | |
|------------------|---------------------|
| (1) Epididymis | (2) Seminal Vesicle |
| (3) Thecal cells | (4) Oviduct |

08. First cleavage in frog is :

- | | |
|----------------|-----------------|
| (1) Horizontal | (2) Meridional |
| (3) Equatorial | (4) Latitudinal |

09. Which of the following is nuclear receptor ?

- | | |
|--------|----------|
| (1) AR | (2) GPCR |
| (3) IR | (4) MT1 |

10. Cryptorchidism is related to :

- | | |
|------------|--------------|
| (1) Testes | (2) Thyroid |
| (3) Ovary | (4) Pancreas |

11. Herringbone cross-beds suggest:

- | | |
|-------------------------------|------------------------|
| (1) River sedimentation | (2) Tidal influence |
| (3) Deep marine sedimentation | (4) Desert environment |

12. Arkoses are:

- (1) Quartz-rich sandstones
- (2) Feldspar-rich sandstones
- (3) Matrix-rich sandstones
- (4) Rock fragments-rich sandstones

13. Illitization is the process in which:

- (1) Chlorite converts into illite
- (2) Feldspar converts into clay
- (3) Chert converts into quartz
- (4) Biotite converts into vermiculite

14. Thermal maturity of coal is determined by measuring reflectance of which of the following maceral :
- | | |
|----------------|------------------|
| (1) Inertinite | (2) Liptinite |
| (3) Vitrinite | (4) All of above |
15. Cannel coals are rich in:
- | | |
|--------------|---------------|
| (1) Alginate | (2) Sporinite |
| (3) Both | (4) None |
16. A good reservoir rock for hydrocarbons should have:
- | |
|------------------------------------|
| (1) Porosity |
| (2) Permeability |
| (3) Both porosity and permeability |
| (4) None |
17. The post-mortem history of fossils is studied under the branch of:
- | | |
|---------------------|-------------------|
| (1) Ichnology | (2) Palaeoecology |
| (3) Biostratigraphy | (4) Taphonomy |
18. In brachiopods, the pedical valve is also called as :
- | | |
|--------------------|-------------------|
| (1) Brachial valve | (2) Ventral valve |
| (3) Right valve | (4) Dorsal valve |
19. Ediacaran fauna belong to:
- | | |
|---------------------|-----------------------|
| (1) Mesoproterozoic | (2) Palaeoproterozoic |
| (3) Neoproterozoic | (4) Archaeozoic |

20. The Coccoliths are microscopic:

- | | |
|------------------|----------------------|
| (1) Marine algae | (2) Non-marine algae |
| (3) Marine fungi | (4) Non-marine fungi |

21. Which of the following microfossil groups is useful in stratigraphic correlation of a marine with a non-marine sequence ?

- | | |
|------------------|----------------|
| (1) Foraminifera | (2) Radiolaria |
| (3) Pteropoda | (4) Ostracoda |

22. Assign Kajrahat Formation to the correct Group in the following:

- | | |
|------------|-------------|
| (1) Kaimur | (2) Bhandar |
| (3) Semri | (4) Rewa |

23. Which one is correct definition of carbonatite ?

- (1) Carbonatite are igneous rock that contains > 50% by volume of carbonate minerals.
- (2) Carbonatite are igneous rock that contains 10% to 50% by volume of carbonate minerals.
- (3) Carbonatite are igneous rock that contains > 90% by volume of carbonate minerals.
- (4) Carbonatite are igneous rock that contains < 50% by volume of carbonate minerals.

24. Micrographic intergrowth of quartz and alkali feldspar is known as:

- | | |
|------------------------|-------------------------|
| (1) Myrmekite texture | (2) Granophyre texture |
| (3) Variolitic texture | (4) Symplectite texture |

- 25.** Which one of the following system is also known as “Petrogeny’s Residual System” ?
- (1) Nepheline-Anorthite-Silica system
 - (2) Nepheline-Diopside-Silica system
 - (3) Nepheline-Anorthite-Kalsilite system
 - (4) Nepheline-Kalsilite-Silica system
- 26.** Precision of a chemical analysis refers to:
- (1) Lowest concentration which can be ‘determined’ by a particular method/instrument
 - (2) Repeatability of a measurement
 - (3) An estimate of how close our measured values is to the true value
 - (4) All the three above
- 27.** An atom, called nuclide, is described by :
- (1) Specifying the number of protons and the number of neutrons in the nucleus
 - (2) Specifying the number of protons and the number of electrons in the nucleus
 - (3) Specifying the atomic number and mass number
 - (4) Specifying the number of protons only

28. What is an isochron diagram ?

- (1) An isochron diagram is a bivariate plot of measured daughter-parent isotope ratios for a suite of cogenetic samples.
- (2) An isochron diagram is a bivariate plot of measured parent-daughter isotope ratios for samples of different origin.
- (3) An isochron diagram is a trivariate plot of measured parent-daughter isotope ratios for a suite of cogenetic samples.
- (4) An isochron diagram is a bivariate plot of measured parent-daughter isotope ratios for a suite of cogenetic samples.

29. The maximum amount of dip of a bed is measured along $N40^{\circ}E$. The strike direction of the bed is :

- (1) N-S
- (2) E-W
- (3) $N50^{\circ}W$
- (4) $S50^{\circ}W$

30. The amount of dip measured along the strike direction of a vertical bed is :

- (1) 45°
- (2) 60°
- (3) 90°
- (4) Zero

31. The angle of inclination of hinge line with the horizontal is :

- (1) Dip
- (2) Plunge
- (3) Pitch
- (4) Strike

32. Which of the following structures is best indicator of flow direction ?

- | | |
|--------------------|-----------------|
| (1) Ripple mark | (2) Mud crack |
| (3) Graded bedding | (4) Rain prints |

33. Foliation in a rock is defined as :

- (1) A planar feature with randomly oriented minerals
- (2) A planar feature with well oriented minerals
- (3) A linear feature with randomly oriented minerals
- (4) A linear feature with well oriented mineral

34. When a bedded sedimentary rock overlying the non-bedded igneous rock, then it is known as :

- | | |
|--------------------------|--------------------------|
| (1) Disconformity | (2) Nonconformity |
| (3) Angular unconformity | (4) Blended unconformity |

35. In a limited are when younger rock is surrounded by older rock, then the structure is called as :

- | | |
|------------|-------------|
| (1) Klippe | (2) Window |
| (3) Inlier | (4) Outlier |

36. The facies of Low Pressure metamorphism occupying the maximum width of contact aureole :

- | | |
|------------------------------------|--------------------------------|
| (1) Albite-epidote hornfels facies | (2) Hornblende hornfels facies |
| (3) Pyroxene hornfels facies | (4) Sanidinite facies |

37. In the thin section of a regional metamorphic rock, the garnet core has 'S'-shaped inclusion trail while the garnet rim is inclusion free with idioblastic outline then what should be the most appropriate conclusion :
- (1) Deformation outlasted crystallization
 - (2) Crystallization outlasted deformation
 - (3) No relationship can be suggested between deformation and crystallization
 - (4) It depends on where more inclusions were present in the matrix
38. Paired metamorphic belts are characterized by two juxtaposed linear belts of :
- (1) low-T, high-P metamorphic mineral assemblage and another characterized by high-T, low-P mineral assemblage without a fault in between
 - (2) low-T, high-P metamorphic mineral assemblage and another characterized by high-T low-P mineral assemblage separated by a fault between the two
 - (3) low-T, high-P metamorphic mineral assemblage and another characterized by intermediate P, high T separated by a fault between the two
 - (4) Intermediate-T, high-P metamorphic mineral assemblage and another characterized by high-T, low-P mineral assemblage without a fault in between

39. The fluid during the granulite facies metamorphism leading to charnockites of South India is :

- (1) H_2O (2) CO_2
- (3) Mostly H_2O with little CO_2 (4) Mostly CO_2 with little H_2O

40. Why Thompson's AFM projection is not useful for the metamorphic rocks deficient in muscovite and rich in K feldspar?

- (1) Because biotite cannot be plotted
- (2) AFM projection is useful only for pelitic rocks
- (3) Because the reaction muscovite+quartz = K-feldspar + sillimanite + H_2O has taken place
- (4) Simple because the biotite plots within the triangle

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. Discuss the significance of asymmetric shear sense indicators. Do the σ and δ type shear sense indicators have any significance for the rate of deformation/rate of crystallization relationship.
02. What are the three types of plate margins? Discuss the significance of each one of them.
03. Write a note on the relation between magma generation and tectonic setting.
04. Write a note on the use of Nd-isotopes in igneous rock petrogenesis.
05. Discuss the Paleontological criteria for demarcating Precambrian/Cambrian boundary.
06. Application of foraminifera in paleotemperature estimation.
07. Discuss the Greywacke problem.
08. Write a note on structural traps.
09. What is geothermobarometry? Formulate an equation for either a geothermometer or a geobarometer.
10. What are P-T-t paths? Discuss their significance.

Question No.

Page for Short Answer

Question No.

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Question No.

Page for Short Answer

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/का, भागी होगा/होगी।