

TEST CODE Ph.DET-403
ENTRANCE TEST-2021

Applied Geology

(To be filled by the Candidate/निम्न पूर्तियों परीक्षार्थी स्वयं भरें)

Name of Candidate

परीक्षार्थी का नाम

Roll No. (in figures)

अनुक्रमांक (अंकों में)

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Maximum Marks : 70

अधिकतम अंक : 70

Exam. Centre

परीक्षा केन्द्र

Time : 2 Hour

समय : 2 घण्टे

No. of Pages in Question Booklet : 24 (including Cover Pages) No. of Questions in Booklet : 100

SEAL

Signature of Invigilator

निरीक्षक के हस्ताक्षर

Instructions to the Examinee :

1. Do not open the Question Booklet unless you are asked to do so.
2. The Question Booklet contains 100 questions. Each questions carry 0.70 marks. Examinee is required to answer all 100 questions in the OMR Answer-Sheet and not in the Question Booklet. All questions carry equal marks.
3. Examine the Question Booklet and OMR Answer-Sheet very carefully before you proceed. Faulty Question Booklet due to missing or duplicate paper/question or having any other discrepancy should be immediately replaced.

परीक्षार्थियों के लिए निर्देश :

1. प्रश्न-पुस्तिका को तब तक न खोलें जब तक आपसे कहा न जाये।
2. प्रश्न-पुस्तिका में 100 प्रश्न हैं। प्रत्येक प्रश्न 0.70 अंक का है। परीक्षार्थी को सभी प्रश्नों को केवल दी गई OMR उत्तर-पत्रक (शीट) पर ही हल करना है, प्रश्न-पुस्तिका पर नहीं। सभी प्रश्नों के अंक समान हैं।
3. प्रश्नों के उत्तर अंकित करने से पूर्व प्रश्न-पुस्तिका तथा OMR उत्तर-पत्रक (शीट) को सावधानीपूर्वक देख लें। दोषपूर्ण प्रश्न-पुस्तिका जिसमें कुछ भाग छपने से छूट गये हों या एक से अधिक बार छप गये हों या उसमें किसी अन्य प्रकार की कमी हो, उसे तुरन्त बदल लें।

(Remaining instructions on last page)

(शेष निर्देश अन्तिम पृष्ठ पर)

PART-A RESEARCH METHODOLOGY

1. Random sampling is helpful as it is
 - (A) Reasonably accurate
 - (B) Free from personal biases
 - (C) An economical method of data collection
 - (D) All the above
2. A college wants to give training in use of "Statistical Package for Social Science" (SPSS) to researchers. For this the college should organize:
 - (A) Lecture
 - (B) Seminar
 - (C) Workshop
 - (D) Conference
3. The assumption about the expected result of the research is called.
 - (A) Theory.
 - (B) Concept
 - (C) Hypothesis
 - (D) Understanding
4. The essential components of a dissertation are:
 - (A) Introduction, Data collection, Data analysis, Conclusion and recommendation
 - (B) Introduction, Literature review, Research methods, Results, Discussion, Conclusion
 - (C) Literature review, Research methods, Results, Conclusion
 - (D) Introduction, Data analysis, Results, Discussion, Bibliography
5. Which one of the following component is essential for carrying out research in applied geology?
 - (A) Exploration,
 - (B) Exploitation
 - (C) Mapping
 - (D) Geological mapping
6. Failure to acknowledge others work along with your results is called as:
 - (A) Acknowledgement
 - (B) Foot note
 - (C) Plagiarism.
 - (D) Mistake
7. A hypothesis, which develops while planning the research is
 - (A) Null hypothesis
 - (B) Working hypothesis
 - (C) Relational hypothesis
 - (D) Descriptive hypothesis.

8. Which of the following statement is not true?
- (A) A research proposal is a document that presents a plan for a project
 - (B) A research proposal shows that the researcher is capable of successfully conducting the proposed research project of
 - (C) A research proposal is an unorganized and unplanned project
 - (D) A research proposal is just like a report, written before the research project.
9. Under crossed polars, a mineral remains dark at all stages of rotation of the microscope stage. Which of the following statement(s) is/are NOT correct?
- (A) The mineral is isotropic
 - (B) The mineral is biaxial with an optic orientation corresponding to the principal section
 - (C) The mineral is uniaxial with an optic orientation containing the Y-vibration direction only
 - (D) The mineral is uniaxial with an orientation perpendicular to the optic axis.
10. Which one of the following rock type, would you search for Orthomagmatic Ores
- (A) Kimberlite
 - (B) Granite
 - (C) Ultramafic rocks
 - (D) Basalts
11. For any research proposal, it is essential that proposer has defined its
- (A) Objectives,
 - (B) Results
 - (C) Previous work
 - (D) None of the above
12. Molybdo-vanadate solution is used as a rapid test in the field for exploration of
- (A) Calcite
 - (B) Phosphorite
 - (C) Pyrolusite and Psilomelane
 - (D) Barite and dolomite
13. In an area, a right side up sequence of quartzite-phylite and slate is exposed, dipping 40° due north, what will happen:
- (A) While moving along dip northwards, older beds will be exposed.
 - (B) While moving along dip northwards, younger beds will be exposed
 - (C) While moving along dip southwards, younger beds will be exposed.
 - (D) While moving eastward older beds will be found.

14. Bearing is defined as
- (A) Horizontal angle measured between a line and meridian.
 - (B) Horizontal angle
 - (C) Vertical angle between horizon and North pole
 - (D) None of the above
15. EPMA stands for
- (A) Electron Proton Macro Analyzer.
 - (B) Electron Probe Micro Analysis
 - (C) Electronically Programmed micro Analysis
 - (D) None of the above.
16. In structural studies, orientation of linear structure is expressed by determining
- (A) Plunge
 - (B) Trend and plunge
 - (C) Strike and plunge
 - (D) Strike and dip
17. Equal area stereo net was introduced by:
- (A) Billings
 - (B) Ramsay
 - (C) Schmidt
 - (D) Wolf
18. Name the equipment employed for determining orientation of linear features under microscope.
- (A) Universal Stage
 - (B) Electron microscope Stage
 - (C) Differential stage
 - (D) All the above
19. Poisson distribution is applied for
- (A) Regular Random Variable.
 - (B) Constant time function
 - (C) Discrete Random Variable
 - (D) Irregular Random Variable
20. Calculate the mean from the given data set: 3, 8, 12, 17, 16, 14, 6, 8, 16, and 10.
- (A) 11
 - (B) 12
 - (C) 13
 - (D) 10

21. Which of the following need not be addressed while writing a research proposal?
- (A) Be clear and brief in defining the research problem.
 - (B) Provide a thorough review of the literature related to the proposed problem, and provide convincing evidence that this topic is worthy of in-depth investigation
 - (C) Be sure about the methodology you are going to adopt to achieve the objectives
 - (D) Be sure that your proposal is similar to other's proposals, and aims at addressing similar problems.
22. List of the literature that you have actually used or cited in your proposal should be given under:
- (A) Reference
 - (B) References
 - (C) Citations
 - (D) Bibliography
23. What is the major attribute of Correlation Analysis?
- (A) Association among variables
 - (B) Difference among variables.
 - (C) Regression among variables
 - (D) Variations among variables
24. What is the name of the conceptual framework in which the research is carried out?
- (A) Research hypothesis
 - (B) Synopsis of Research
 - (C) Research paradigm
 - (D) Research design
25. Which one among the following statements is correct in context to research?
- (i) Research refers to a series of systematic activity or activities undertaken to find out the solution to a problem.
 - (ii) It is a systematic, logical and unbiased process wherein verification of hypotheses, data analysis, interpretation and formation of principles can be done.
 - (iii) It is an intellectual inquiry or quest towards truth,
 - (iv) It enhances knowledge.

Select the correct answer from the codes given below:

- (A) (i), (ii), (iii) and iv)
- (B) (i), (ii) and (iii)
- (C) (ii), (i) and (iv)
- (D) (ii), (iii) and (iv)

26. What are those conditions where a research problem is not viable?

- (A) It is new and adds something to knowledge
- (B) It can be researched
- (C) It has utility and relevance
- (D) It contains dependent and independent variables

27. While writing literature review for a research proposal one must consider the following:

- (A) To cite the literature which he has consulted
- (B) To compare arguments, theories, methodologies adopted by predecessors
- (C) Describe the major areas of disagreement, controversies, debates among the scholars
- (D) All the above.

28. Match the following:

A

B

- | | |
|---|---|
| <ul style="list-style-type: none"> (1) Statement of Problem (2) Literature Review (3) Methodology (4) Time Line | <ul style="list-style-type: none"> i) Attempt to describe research of the predecessors and critically evaluate past Researches in the on text of proposed research. ii) Introduces the problem by identifying the variables to be investigated iii) Describe how to conduct research and analyze data. iv) Describe stages of completion of the research within realistic time frame. |
|---|---|

Chose the correct answer:

- (A) 1- ii, 2-i, 3-iii, 4-iv
- (B) 1-i, 2-ii, 3-iii, 4-iv
- (C) 1-iii, 2-i, 3-iv, 4-iii
- (D) 1- iv, 2-i, 3-iii, 4-ii

29. Which one of the following is not supported for financial assistance by Funding agencies:

- (A) Equipments and chemicals
- (B) Contingency
- (C) Fieldwork and Foreign Travel
- (D) Foreign Travel

30. Match the following

A	B
1) Social Sciences.	(a) MOES
2) Basic Sciences	(b) DST
3) Biological Sciences.	(c) ICSSR
4) Earth Sciences	(d) DBT

Chose correct answer:

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

31. Which of the following statements is not a strength of X-Ray diffractometer.

- (A) Powerful and rapid (<20 min) technique for identification of an unknown mineral
- (B) In most cases, it provides an unambiguous mineral determination
- (C) Minimal sample preparation is required
- (D) Homogeneous and single phase material is best for identification of an unknown

32. In Bragg's Law / $\Delta = 2d\sin\Theta$

- (A) Θ stands for wavelength of incident X-Ray
- (B) Θ stands for angle between incident X-Ray and the lattice plane
- (C) Θ Stands for path difference between reflected X-Ray waves.
- (D) None of the above

33. EPMA analysis is considered to be:

- (A) Non destructive
- (B) Destructive
- (C) Partially nondestructive
- (D) All above

34. Which one is the correct order of arrangement of four components from top to bottom in an EPMA

- (A) Electron Source or Gun- Electromagnetic lenses to focus electron beam - Sample chamber - A variety of detectors to collect x-rays and electrons emitted from the sample.
- (B) Electron Source or Gun-- Electromagnetic lenses to focus electron beam – Sample chamber
- (C) Electron Source or Gun - Electromagnetic lenses to focus electron beam - A variety. of detectors to collect x-rays and electrons emitted from the sample – Sample Chamber.
- (D) None of the above.

35. What will happen, if a birefringent substance is placed between two polarizing plates that are positioned with their polarization directions 90 degrees to each other?

- (A) Optical system will transmit light.
- (B) The birefringence of the inner substance polarizes the light that travels through the first polarizing plate in directions parallel to the optical directions of the substance and the optical system will transmit light.
- (C) The birefringence of the inner substance does not polarize the light that travels through First polarizing plate, hence optical system will not transmit light.
- (D) All above may happen

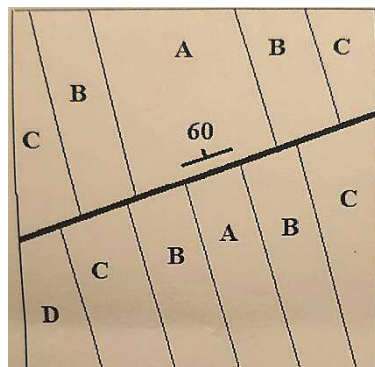
36. Match the following terms commonly used in a petrographic microscope:

A	B
1. Interference figure	(a) Convergent light
2. Bertrand lense	(b) Iris diaphragm
3. Convergent Light	(c) Conoscopic illumination
4. Becke line	(d) Below Ocular

Chose the correct match

- (A) 1.-a, 2-d, 3.-c. 4.-b.
 - (B) 1.-d, 2-a, 3.-c, 4.-b
 - (C) 1.-c, 2-d, 3.-b, 4.-a
 - (D) 1.-d, 2-c, 3.-b, 4.-a
37. Which one of the following minerals is commonly used for determination of vibration direction of the lower nicole in a polarizing microscope?
- (A) Muscovite
 - (B) Hornblende
 - (C) Tourmaline
 - (D) Augite
38. AAS is a method of analysis based on:
- (A) Absorption of radiation by atoms when a solution of metallic salt is aspirated into a flame.
 - (B) emission of radiation by atoms when a solution of metallic salt is aspirated into a flame
 - (C) refraction of radiation by atoms when a solution of metallic salt is aspirated into a flame
 - (D) None of the above

39. Which one of the following is not a thermal analysis technique?
- (A) TGA
 - (B) DTA
 - (C) DSC
 - (D) TDA
40. Which of the following techniques will you prefer for clay mineral characterization?
- (A) AAS, XRD, TG-DTA, FT-IR, SEM-EDX.
 - (B) Petrographic Microscope, XRD, DTA, SEM
 - (C) Petrographic Microscope, AAS, XRD, DTA, SEM
 - (D) None of the above
41. Which of the following is not included under preliminary survey?
- (A) Knowing the general topography of the area
 - (B) Knowing the lithology of the area
 - (C) Knowing the structural condition of the rocks
 - (D) Driving the pilot tunnels
42. Accessory minerals present in terrigenous sedimentary rocks are called as heavy minerals because:
- (A) They are authigenically formed
 - (B) They are stable during weathering
 - (C) They are resistant to weathering, erosive processes and intrastatal solutions
 - (D) All the above
43. Which of the following triangular diagrams prepared from modal composition of a sandstone is used to infer provenance?
- (A) Qt-F-L diagram.
 - (B) Qm-F-M diagram
 - (C) Qm-C-L
 - (D) None of the above
44. In the geologic map given below, units A, B, and C are sedimentary rocks; unit A is the oldest and unit C is the youngest. The sedimentary rocks are cut by a fault, indicated by the dark line, dips 60° to north.



What type of structure is shown on the map?

- (A) A faulted syncline
- (B) A faulted anticline
- (C) A reverse faulted anticline
- (D) A folded strike-slip fault

Assertion Reason Type Question

Examine carefully the two statements given in each question as Assertion (A) and Reason (R) and answer the questions selecting correct code as given below:

Codes

- (a) If both the Assertion (A) and Reason (R) are correct and if R explains A.
- (b) If both the Assertion (A) and Reason (R) are correct, but R does not explain A.
- (c) If Assertion (A) is True but Reason (R) is False
- (d) If both Assertion (A) and Reason (R) are wrong

45. **Assertion (A):** Barite deposits occur in the Cuddapah Supergroup of Andhra Pradesh

Reason (R): They are confined to Cumbum Formation

46. Assertion (A): EDX analysis is widely employed technique along with SEM.

Reason(R): Using EDX, researchers can quickly know the chemical composition of the sample, along with distribution and concentration of constituting elements

47. Assertion (A): Structural Geology and Tectonics both deal with deformation of earth's crust and lithosphere

Reason (R): In the study of structural geology only the relative sequence of deformation is examined

48. Assertion (A): Shapiro (1955) proposed a comprehensive method of determining major oxide composition of rocks and minerals.

Reason (R): Colorimetric analysis requires two ways of sample digestion and solution preparation referred as A and B solutions.

49. Assertion (A): Palaeocurrent directions are revealed by careful measurement of the amount and direction of dip of foreset laminae.

Reason (R) Foresets are not always inclined in down current direction

50. Assertion (A): Coastal areas are often covered by deltaic plains; a delta is witnessed by occurrence of main River and its distributaries.

Reason(R): Coastal areas are often marked with marine transgression and regression due to Sea level changes

PART-B Concerned Subject - Applied Geology

51. Most common gem minerals are members of the

- (A) Isometric, tetragonal and hexagonal crystal systems
- (B) Monoclinic and triclinic systems
- (C) Orthorhombic and isometric systems
- (D) Isometric system

52. The edges of a unit cell are parallel to:

- (A) Optic axes.
- (B) Crystal axes
- (C) Synoptic axes
- (D) (A) and (B) above

53. Elements with low electronegativity values readily form cations by

- (A) Gaining valence electron in outermost shell
- (B) Loosing outer valence electron
- (C) either by losing or gaining valence electron
- (D) None of the above

54. A mineral structure in which specific atomic sites are occupied in variable proportions by 2 or more different elements is called as

- (A) Solidified solution.
- (B) solid solution
- (C) isomorphous solution
- (D) polymorph solution.

55. Which of the following mineral groups belong to orthosilicate?

- (A) Tourmaline Beryl, Corundum,
- (B) Serpentine, Muscovite, Biotite, Talc,
- (C) Augite, Hornblende, Hypersthene
- (D) Olivine, Zircon, Garnet

56. Igneous rocks having SiO_2 content between 55-65 % are grouped as
- (A) Felsic
 - (B) Intermediate
 - (C) Mafic
 - (D) Ultramafic
57. The pressure and heat that drive metamorphism results from.
- (A) Internal heat of earth, the weight of overlying rocks and pressure due to deformation.
 - (B) Weight of overlying rocks, and nuclear fusion
 - (C) Heat released during crystallization, horizontal pressure due to deformation
 - (D) None of the above.
58. Generation of magma beneath oceanic ridges, continental rift valleys and at hot spots is caused by
- (A) Transfer of Heat from other sources
 - (B) Flux melting
 - (C) Decompress melting.
 - (D) All the above
59. Which of the following statements about rock deformation is false?
- (A) deep crustal rocks under high confining pressure are more likely to deform ductily than shallow crustal rocks
 - (B) hotter rocks are more likely to deform ductily than cooler rocks
 - (C) most sedimentary rocks are more deformable than igneous rocks
 - (D) rocks under low confining pressure are more likely to deform ductily than rocks under high confining pressure
60. An overturned fold is characterized by
- (A) two limbs at right angles to one another
 - (B) two limbs dipping in the same direction with one tilted beyond vertical
 - (C) two limbs dipping in opposite directions
 - (D) two limbs not parallel to each other
61. An asthenosphere is the term given to
- (A) Mantle
 - (B) Core
 - (C) Upper Mantle
 - (D) Lower Mantle

62. Which one of the following would you NOT associate with divergent (constructive) plate margins?
- (A) Highly explosive volcanic activity.
 - (B) Shallow focus earthquakes
 - (C) Basaltic fissure eruption
 - (D) Sea floor spreading
63. Which type of seismic activity is associated with divergent (constructive) plate margins?
- (A) Shallow < 70 km deep
 - (B) Intermediate 70-300 km deep
 - (C) Deep >3000Km deep
 - (D) None of the above
64. Which man is known as Java man?
- (A) Ramapithecus
 - (B) Australopithecus
 - (C) Pithecanthropus
 - (D) Sinanthropus
65. Principle of faunal succession states that:
- (A) Each stratigraphic succession was characterized by the same distinctive fossil
 - (B) Each stratigraphic succession might have been characterized by the same distinctive fossil assemblage.
 - (C) Each stratigraphic succession was characterized by the distinctively different fossil assemblage.
 - (D) None of the above
66. Which of the following foraminifers provide concrete evidence about the environment of deposition?
- (A) Planktonic foraminifers
 - (B) Benthic foraminifers)
 - (C) Calcareous nannofossils
 - (D) All the above
67. A greenstone belt is
- (A) a linear or pod like association of volcanic and sedimentary rocks
 - (B) the ancient nucleus of a continent
 - (C) an area of granite and gneiss accumulated by magmatic differentiation
 - (D) finely layered chert and iron oxides

68. Match the following and chose correct answer from the given list.

A

B

- | | | |
|---------------------|-----|--------------------------------------|
| 1. Hadean | (a) | Intense meteorite bombardment |
| 2. Early Crust | (b) | Mafic-Ultramafic |
| 3. Early Atmosphere | (c) | CO ₂ and H ₂ S |
| 4. Nebula | (d) | Hydrogen and Helium |

Choose from

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

69. Rocks of the greenstone belt associations indicate

- (A) deposition on land
 (B) deposition along continental margins
 (C) deposition in deep water of back-arc basins
 (D) deposition in oceanic trenches

70. The first stage of a Wilson cycle involves

- (A) rifting of continents to form ocean basins
 (B) closure of ocean basins by subduction
 (C) accretion of volcanic arcs to plate margins
 (D) drifting of rifted continental fragments

71. Match the following

A

B

- | | | |
|-------------------------|-----|---------------------------|
| 1. Gravel | (a) | Alluvial Fan environment. |
| 2. Sand, gravel, mud | (b) | Glacial environment |
| 3. Waves and Tides | (c) | Deltaic environment |
| 4. Symmetrical Ripples. | (d) | Beach environment |

Chose correct answer:

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

72. A unit that displays a different lithological aspect relative to rocks above and below is Called as:
- (A) Rock Stratigraphic unit
- (B) Time-Rock Unit
- (C) Chronostratigraphic unit
- (D) None of the above
73. Rift related depressions in central India developed during Permo-Triassic time are characterized as:
- (A) Fluvial deposits
- (B) Glacial deposits
- (C) Fluvio-glacial containing coal deposits.
- (D) Fluvio-glacial deposits containing ironstones.
74. Jurassic formations of Kutch were developed mostly under
- (A) Fluvial environments
- (B) Fluvio-glacial environments
- (C) Marine environments
- (D) Aeolian environments.
75. The correct order of four parallel tectonic belts of Himalaya from North to South is:
- (A) Outer, Lesser, Greater, Trans and Tethys Himalaya
- (B) Trans, Tethys, Greater, Lesser and Outer Himalaya
- (C) Lesser, Outer, Tethys, Trans and Greater Himalaya
- (D) None of the above is correct
76. Match the following:
- | A | B |
|-----------------------|-----------------|
| 1. Gungri Formation. | (a) Permian |
| 2. Muth Formation | (b) Precambrian |
| 3. Haimanta Group | (c) Devonian |
| 4. Salkhala Formation | (d) Kunzum La |
- Chose correct combination:**
- (A) 1. (a), 2. (c), 3. (d), 4. (b)
- (B) 1. (b), 2. (c), 3. (d), 4. (b)
- (C) 1.(c), 2. (d), 3. (a), 4. (b)
- (D) 1. (d), 2. (a), 3. (b), 4. (c)

77. The pH of the medium is particularly significant in controlling the

(A) Precipitation of hydroxides from solution

(B) Precipitation of oxides from solution

(C) Precipitation of silicates from solution

(D) Precipitation of carbonates from solution

(A) Permian

78. A group of elements of Periodic Table having incompletely filled outer shell and forming metallic bonds is classified under:

(A) Lithophile

(B) Chalcophile

(C) Siderophile

(D) All the above

79. Match the following:

A

B

1. Dissemination

(a) Chromite deposits of Keonjhar

2. Segregation

(b) Titaniferous magnetite deposits in Adirondack, USA

3. Residual Liquid

(c) Uranium deposits of Jaduguda, Jharkhand Segregation

4. Residual liquid

(d) Titaniferous magnetite bands injection of Bushveld Complex.

Chose correct option:

(A) 1-c, 2-a, 3-d, 4-b

(B) 1- b, 2-c, 3-d, 4-a.

(C) 1-a, 2-b, 3-c. 4-d

(D) 1-c, 2-a, 3-b, 4- d.

80. Sequence of mineral deposition in an ore is called as

(A) Paragenesis,

(B) Zoning

(C) Magmatogenesis,

(D) Bowen's reaction series

81. Sitampundi, Sukinda, Nausahi and Dras are famous for the occurrence of:
- (A) Iron ores of magmatic origin
 - (B) Iron Ores associated with BIF
 - (C) Chromite ores of stratiform type
 - (D) Chromite ores
82. The ratio of a unit of waste material removed per similar unit of ore material removed is called as:
- (A) Stripping
 - (B) Overburden ratio
 - (C) Stripping ratio
 - (D) Mine waste
83. Which type of dam usually has a triangular profile and can resist the forces by its own weight?
- (A) Gravity dam
 - (B) Arch dam
 - (C) Geotechnical dam
 - (D) Embankment dam.
84. When can the rocks act as a natural arch?
- (A) Tunnel axis is parallel to dip direction
 - (B) Tunnel axis is normal to dip direction.
 - (C) Tunnel axis is inclined to dip direction
 - (D) Tunnel axis is parallel to strike direction
85. Bodies of seawater of considerable volume moving along and parallel to the shore are called as:
- (A) Oscillatory waves.
 - (B) Translatory waves
 - (C) Littoral currents
 - (D) Lateral currents
86. Which of the following can contaminate an aquifer?
- (A) agricultural regions
 - (B) landfills
 - (C) gas stations
 - (D) all of these

87. Hydrograph is a graphical representation of:
- (A) Rain fall
 - (B) Surface runoff
 - (C) Discharge flowing in the river
 - (D) Groundwater flow
88. The drawdown, corresponding to a steady discharge, is observed at a number of wells in
- (A) pumping out test
 - (B) pumping in test
 - (C) constant head permeability test
 - (D) falling head permeability test
89. Which one of the following parameters is accurate for DGPS?
- (A) Positional accuracies~1-2 m if rover is less than 1-2 km from the reference station
 - (B) Positional accuracies~2-5 m if rover is less than 2-5 km from the reference station
 - (C) Positional accuracies~5-10 m if rover is less than 5-10 km from reference station
 - (D) Positional accuracies~5-10 m if rover is less than 25 km
90. The instruments which provide electromagnetic radiation of specified wave length or a band of wave lengths to illuminate the earth surface are called as:
- (A) Sensors
 - (B) Passive sensors
 - (C) Active sensors
 - (D) None of the above
91. Which of the following can act as an example for air-borne platform
- (A) LISS-III
 - (B) Dakota
 - (C) MOS
 - (D) LISS-II
92. The polluted water is one, which
- (A) Contains pathogenic bacteria
 - (B) Consists of undesirable substances rendering it unfit for drinking and domestic use
 - (C) Is safe and suitable for drinking and domestic use
 - (D) Is contaminated

93. The activated carbon is used for
- (A) Disinfection
 - (B) Removing hardness
 - (C) Removing Odor
 - (D) Removing all the above
94. The difference between the observed and the predicted gravity values after applying necessary corrections is referred as
- (A) Free-air anomaly
 - (B) Free-air correction
 - (C) Gravity anomaly
 - (D) Bouguer anomaly

Assertion Reason Type Questions

Examine carefully the two statements given in each question as Assertion (A) and Reason (R) and answer the questions selecting correct code as given below;

Codes

- (A) If both the Assertion (A) and Reason (R) are correct and if R explains A.
- (B) If both the Assertion (A) and Reason (R) are correct, but R does not explain A
- (C) If Assertion (A) is True but Reason (R) is False.
- (D) If both Assertion (A) and Reason (R) are wrong

95. Assertion (A): Prismatic cleavage angle in Pyroxenes is nearly 90° and in Amphiboles it is nearly $60^\circ - 120^\circ$

Reason (B): Presence of single chains of SiO_4 tetrahedron in Pyroxene and double chains of the same in Amphiboles control the cleavage angle.

96. Assertion (A): In hand specimen, quartz can be easily distinguished from Orthoclase.

Reason (R): Orthoclase is biaxial negative and has lower refractive index than quartz

97. Assertion (A): Chronostratigraphic units are bodies of rocks, which were formed during a specified interval of geologic time

Reason (R): Formations, Members and Beds are recognized as units of Chronostratigraphy.

98. Assertion (A): Important petroleum deposits occur in Assam and Gujarat

Reason (R): The Petroliferous horizons of Assam and Gujarat bear similar geo-tectonic settings.

99. Assertion (A): Early Gondwana sediments reveal a perceptible change in the climate. from glacial to warm and humid condition, represented by tillites followed by coal bearing sediments

Reason (R): India was a part of the Gondwana Supercontinent in Late Carboniferous, located in the vicinity of South Pole, but moved gradually northwards in the Permian.

100. Assertion (A): Anticlines are eroded to form more commonly valleys.

Reason (R): Anticlines are less stable along their axes.

ROUGH WORK

ROUGH WORK

4. Four alternative answers are mentioned for each questions as A, B, C & D in the Question Booklet. The candidate has to choose the most appropriate and correct answer and mark the same in the OMR Answer sheet as per the direction:

Example :

Q1 (A) ● (C) (D)
Q2 (A) (B) ● (D)
Q3 (A) ● (C) (D)

Illegible answers with cutting and over-writing will be cancelled.

5. In case the candidate does not fill the appropriate circle in the Answer-Sheet and leave blank 'Zero' mark will be given.
6. The candidate has to mark answers on the OMR Answer-Sheet with **Black or Blue Ball Point Pen** only Carefully as per directions. **Do not use lead pencil.**
7. The examinee will make sure that OMR Answer-Sheet is handed over to the invigilator before leaving the examination hall.
8. Rough work, if any, should be done on the blank page provided for the purpose at the end of Question booklet.
9. Write your Roll Number and other required details in the space provided on the title page of the booklet and on the OMR Answer-sheet.
10. To bring and use of log-book, calculator, cellular phone & electronic devices in examination hall is strictly prohibited.
11. In case of any discrepancy or difference in English and Hindi Version of Questions in Booklet, English Version shall be treated/taken as final.
12. The examinee may carry the Question Booklet after the completion of Examination.
13. University will not be responsible for incorrect entries in the OMR sheet by candidates.

4. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार सम्भावित उत्तर हैं (A, B, C & D)। परीक्षार्थी को उन चारों विकल्पों में से एक सबसे सही तथा सबसे उपयुक्त उत्तर छाँटना है। उत्तर को आन्सर-शीट में सम्बन्धित प्रश्न संख्या में निम्न प्रकार भरना है :

उदाहरण :

Q1 (A) ● (C) (D)
Q2 (A) (B) ● (D)
Q3 (A) ● (C) (D)

अपठित उत्तर या ऐसे उत्तर जिन्हें काटा या बदला गया है, निरस्त कर दिये जायेंगे।

5. यदि परीक्षार्थी आन्सर-शीट में उपयुक्त गोले को नहीं भरता है और आन्सर-शीट को खाली छोड़ देता है, तो 'शून्य' अंक प्रदान किया जायेगा।
6. अभ्यर्थी को प्रश्नों के उत्तर OMR आन्सर-शीट पर केवल **काले या नीले बॉल प्वाइंट पेन** से निर्देशानुसार अंकित करने होंगे। **पेन्सिल का प्रयोग न करें।**
7. परीक्षा की समाप्ति पर परीक्षा भवन छोड़ने से पूर्व परीक्षार्थी को OMR आन्सर-शीट निरीक्षक के पास अनिवार्यतः जमा करनी होगी।
8. परीक्षार्थी को रफ कार्य, प्रश्न पुस्तिका के अन्त में, रफ कार्य के लिए दिये खाली पेज पर ही करना चाहिए।
9. प्रश्न-पुस्तिका के मुख्यपृष्ठ पर तथा OMR आन्सर-शीट पर निर्धारित स्थान में अनुक्रमांक तथा अन्य विवरण भरें।
10. परीक्षा कक्ष में लॉग-बुक, कैल्कुलेटर, सैल्युलर फोन तथा इलेक्ट्रॉनिक उपकरणों ले जाना तथा उसका उपयोग करना वर्जित है।
11. प्रश्न-पुस्तिका में प्रश्नों के हिन्दी तथा अंग्रेजी अनुवाद में यदि कोई भिन्नता पाई जाती है तो ऐसी स्थिति में अंग्रेजी को ही सही/अन्तिम माना जाएगा।
12. परीक्षार्थी परीक्षा समाप्ति के पश्चात् प्रश्न-पुस्तिका अपने साथ ले जा सकते हैं।
13. विश्वविद्यालय OMR शीट पर आवेदकों द्वारा गलत जानकारी भरने पर जिम्मेदार नहीं होगा।