042/2025

PART – II

Total Number of Questions : 40	Maximum Marks : 200	Time : 3 Hours

INSTRUCTIONS (നിർദ്ദേശങ്ങൾ)

1. Question cum Answer Booklets are processed by electronic means. The following instructions are to be strictly followed to avoid invalidation of answer scripts.
(ചോദ്യവും ഉത്തരവും അടങ്ങുന്ന ഈ ബുക്ക് ലെറ്റുകൾ ഇലക്ട്രോണിക് സാങ്കേതിക വിദ്യയുടെ സഹായത്തോടുകൂടെ മൂല്യനിർണ്ണയം നടത്തുന്നതിനാൽ ഇവ അസാധുവാകാതിരിക്കുവാൻ താഴെപ്പറയുന്ന നിർദ്ദേശങ്ങൾ പൂർണ്ണമായും പാലിക്കുക.)

2. The first page of this question cum Answer Booklet is an OMR data Sheet (Part I). All entries in the OMR sheet are to be made with blue or black ball point pen only.
(ഈ പുസ്തകത്തിന്റെ ഒന്നാമത്തെ പേജ് ഒരു ഒ.എം.ആർ. ഡാറ്റാ ഷീറ്റാണ് (പാർട്ട് I). ഇത് നീലയോ, കറുപ്പോ നിറത്തിലെ ബോൾ പോയിന്റ് പേന ഉപയോഗിച്ച് മാത്രമേ പൂരിപ്പിക്കാവൂ.)

3. Make sure that register number is bubbled correctly and completely; no correction is permitted.
(രജിസ്റ്റർ നമ്പർ രേഖപ്പെടുത്തുന്നതിനുള്ള കുമിളകൾ കൃത്യമായും പൂർണ്ണമായും കറുപ്പിച്ചിട്ടുണ്ടെന്ന് ഉറപ്പു വരുത്തുക. തിരുത്തലുകൾ അനുവദനീയമല്ല.)

4. Do not tamper the bar code printed on the OMR sheet and subsequent pages. Tampering of bar code will result in the invalidation of this booklet.
(ഈ പുസ്തകത്തിൽ എവിടെയും പ്രിന്റ് ചെയ്തിരിക്കുന്ന ബാർ കോഡിൽ ഒരു കാരണവശാലും തിരുത്തലുകളോ, മാർക്കുകളോ പാടില്ല. ഇതിനു വിരുദ്ധമായി ചെയ്യുന്ന പക്ഷം ഈ പുസ്തകം അസാധുവാകുന്നതാണ്.)

5. Answers should be written with blue or black ball point pen only.
(ഉത്തരങ്ങൾ നീലയോ, കറുപ്പോ നിറത്തിലെ ബോൾ പോയിന്റ് പേന ഉപയോഗിച്ച് മാത്രമേ എഴുതാവൂ.)

6. Do not write anything outside the margin of space provided for writing the answer and write only one line of answer between two lines.
(പുസ്തകത്തിൽ ഉത്തരം എഴുതുവാൻ നൽകിയിരിക്കുന്ന സ്ഥലത്തിനു വെളിയിൽ യാതൊന്നും തന്നെ എഴുതുവാൻ പാടില്ല. രണ്ടു വരകൾക്കിടയിൽ ഒരു വരി ഉത്തരം മാത്രമേ എഴുതുവാൻ പാടുള്ളൂ.)

7. Rough work should be done only in the specific page provided with.
(റഫ് വർക്കുകൾ ഇതിനായി നൽകിയിരിക്കുന്ന പേജിൽ മാത്രമേ ചെയ്യുവാൻ പാടുള്ളൂ.)

1. Write a note on the mineral composition and genesis of Granites and Dolerites. (5 Marks)

2. Discuss the role and significance of Igneous petrology in understanding the Earth. (5 Marks)

3. Discriminate the implications of foliated and non-foliated metamorphic rocks. (5 Marks)

4. Discuss the types and facies of metamorphisms associated to the subduction zones (5 Marks)

5. Differentiate the metallic and non-metallic minerals in terms of their properties, occurrence and economic importance. (5 Marks)

6. Illustrate the relationship between silicate structure and the physical properties of silicate minerals. (5 Marks)

7. Explain how the optical indicatrix of biaxial minerals relates to their crystallographic axes and refractive indices. (5 Marks)

8. Explain Miller Indices (MI), their representation in crystal diagrams, and significance of their negative and zero values. (5 Marks)

9. Discuss your views on the impact of increasing level of rainfall on weathering and mass wasting in the land of Kerala. (5 Marks)

10. Explain how an earthquake of high magnitude occurs in a remote area differ in its intensity reports compared to one with the same magnitude occur in a city. (5 Marks)

11. Discuss the formation of deep and wide cracks observed on top of the glaciers, based on the mechanism of glacial movement. (5 Marks)

12. Illustrate the stages of formation of the chain of volcanic islands, and guyots in the oceans. (5 Marks)

13. Write about the diagenetic processes involved in siliciclastic rock formation during deep burial. (5 Marks)

14. Prepare a note on sedimentary structures that are seen in bedding plane. (5 Marks)

15. Differentiate sandstone from conglomerate and shale. (5 Marks)

16. Compare the characteristics of sedimentary basins related to subduction in convergent settings. (5 Marks)

17. Compare the disjunctive and continuous foliations with suitable examples. (5 Marks)

18. Discuss various type of deformation in rocks with respect to increase in temperature and pressure. (5 Marks)

19. Explain the mechanism of formation of various types of folds. (5 Marks)

20. Discriminate the fractures and joints form in the rocks. (5 Marks)

21. Comment on the morphological evolution of Trilobites as a response to changing environment. (5 Marks)

22. Significance of Glossopteris and Gangamopteris fossils. (5 Marks)

23. Explain the lithology and depositional environment of Vindhyan Supergroup of rocks. (5 Marks)

24. Briefly describe Lithostratigraphic, Chronostratigraphic and Geochronologic units. (5 Marks)

25. Chromite deposits are mostly seen associated with ultramafic rocks. Why? (5 Marks)

26. How the process of residual concentration leads to the formation of Bauxite deposits? (5 Marks)

27. Give an account of Iron ore deposits of India. (5 Marks)

28. Mineral sand deposits of Kerala and it's link to the hinterland rocks. (5 Marks)

29. Describe three methods for the sustainable use of mineral resources. (5 Marks)

30. Add your comments about the statement "Climate change has to be fought globally". (5 Marks)

31. Write down the significance of coastal zone protection with particular reference to Kerala. (5 Marks)

32. Express your views about geologist's role in the conservation of environment. (5 Marks)

33. Describe the validity of Darcy's Law as a factor of Reynolds Number, when the flow pattern through porous media transits from laminar to turbulent flow. (5 Marks)

34. Based on pumping test, how can one bring out the relationship between aquifer characteristics and long-term safe yield of groundwater? (5 Marks)

35. How do the interactions between climatic, biological, and topographic factors influence the development of soil profiles over time? (5 Marks)

36. Illustrate to what extent the coupling of hill-slope instability factors can be modelled to predict landslide occurrence in different geological environments. (5 Marks)

37. Based on the aerial photos, describe how you would identify the location of the antiform and synform structures, providing key indicators to look for in the landscape. (5 Marks)

38. Accentuate the potentials of integrated thermal infrared remote sensing and synthetic aperture radar applications in the assessment of mineral exploration in complex geological environments. (5 Marks)

39. Describe the advantages of hyperspectral data over multi-spectral data on enhancing the segmentation accuracy in geological mapping tasks? (5 Marks)

40. Enumerate the steps to design a spatially explicit predictive model to assess the potential hazard of a natural disaster, considering the interaction between environmental variables and socio-economic factors. (5 Marks)
