

GOVERNMENT ZIRTIRI RESIDENTIAL SCIENCE COLLEGE

Subject: Geology

Paper name: Petrology & Geochemistry

Paper No: III

Semester: 2nd semester

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A. Multiple choice questions [75 (15 from each unit)]

1. Wall rock surrounding magma becomes hot by
 - a) conduction
 - b) convection
 - c) radiation
 - d) convection and radiation
2. Igneous rock with the highest concentration of Mg and Fe are likely to have formed from magmas originally derived from
 - a) SIAL
 - b) SIMA
 - c) mantle
 - d) outer core
3. Which are the best example of solid solution
 - a) plagioclase
 - b) plagioclase and pyroxenes
 - c) micas
 - d) quartz and its varieties
4. The term fabric of rocks include
 - a) texture only
 - b) structure only
 - c) both a and b
 - d) texture,structure and mineral composition
5. Forsterite and quartz react to form
 - a) olivine
 - b) diopside
 - c) ferosilite
 - d) enstatite
6. Zoned crystals are formed under the condition of
 - a) rapid cooling
 - b) slow cooling
 - c) intermediate cooling
 - d) any rate of cooling

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7. Which is the source of basaltic lava in mid oceanic ridge
 - a) granitic rock
 - b) ultrafelsic rock of upper mantle
 - c) ultramafic rocks of upper mantle
 - d) none of the above

8. The amount of assimilation of cool wall rock into a magma is limited by
 - a) pressure
 - b) composition of the wall rock
 - c) composition of the magma
 - d) thermal energy of the magma itself

9. Emplacement of pluton is
 - a) pre-tectonic
 - b) syntectonic
 - c) post-tectonic
 - d) all of the above

10. Which volcanic rock contains the lowest percentage of silica
 - a) basalt
 - b) andesite
 - c) trachyte
 - d) rhyolite

11. Which volcanic rock contains relatively high percentage of silica
 - a) basalt
 - b) andesite
 - c) trachyte
 - d) rhyolite

12. Pipe amygdalae commonly occur at
 - a) top of the flow
 - b) middle of the flow
 - c) base of the flow
 - d) contact of two flows

13. Stock, bosses and roof-pendants are related to
 - a) dyke
 - b) sill
 - c) batholiths
 - d) lopolith

14. Ethmolith is
 - a) funnel shaped circular outcrop
 - b) largest intrusive body

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- c) any irregular body
 - d) sickle-shaped body
15. Pahoehoe structure is related to
- a) block lava
 - b) ropy lava
 - c) pillow structure
 - d) lava-drained tunnel
16. Myrmekite structure is produced by intergrowth of
- a) quartz and plagioclase
 - b) quartz and orthoclase
 - c) plagioclase and augite
 - d) albite and oligoclase
17. Batholiths are generally associated with
- a) island arcs
 - b) folded structures
 - c) orogenic belts
 - d) earthquake zone
18. What is the evidence of devitrification
- a) corona structure
 - b) orbicular structure
 - c) perlitic
 - d) percussion figure
19. Leucocratic is
- a) dark coloured rock
 - b) light coloured rock
 - c) extremely dark coloured rock
 - d) intermediate colour
20. Calc-alkaline plutonic rocks are chiefly composed of
- a) feldspar and pyroxene
 - b) feldspar and micas
 - c) quartz and pyroxenes
 - d) feldspar and quartz
21. Sedimentary rocks without stratification is
- a) shale
 - b) limestone
 - c) sandstone
 - d) tillite
22. Sedimentary layers whose thickness is less than 1cm is known as

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- a) stratum
 - b) lamina
 - c) varve
 - d) formation
23. Load cast structure in sedimentary rock can be regarded as
- a) exogenetic
 - b) indogenetic
 - c) biogenic
 - d) none of the above
24. Ripple marks are developed under
- a) deep water condition
 - b) shallow water condition
 - c) a and b
 - d) very deep water condition
25. Ripple marks are best observed in
- a) limestone
 - b) shales
 - c) conglomerate
 - d) sandstone
26. Rain prints can occur in
- a) igneous rock only
 - b) sedimentary rock only
 - c) metamorphic rock only
 - d) all of the above
27. Variation of paleocurrent direction is minimum in the deposit form by
- a) glacial process
 - b) fluvial process
 - c) Aeolian process
 - d) beach process
28. Study of minerals is more important in case of
- a) igneous plutonic rock
 - b) igneous volcanic rock
 - c) sedimentary rock
 - d) metamorphic rock
29. What kind of igneous rock is a likely source for an arkose sandstone
- a) granite
 - b) syenite
 - c) gabbro
 - d) diorite

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30. Name the most abundant chemically or biochemically precipitated rock
- limestone
 - gypsum
 - rock salt
 - chert
31. Metamorphism is
- solid-state reconstitution
 - solid-liquid reconstitution
 - solid-liquid-gas reconstitution
 - liquid-state reconstitution
32. Grain growth and size on metamorphism are a function of
- nucleation kinetics
 - material transfer process
 - growth rate and P_T of crystallization
 - all of the above
33. Greenschist are
- low pressure and low temperature rock
 - high pressure and high temperature rock
 - low pressure and low temperature rock
 - low pressure and high temperature rock
34. Stroutolite are formed by the reaction of
- chlorite and muscovite
 - chlorite and biotite
 - chlorite and olivine
 - chlorite and chloritoid
35. A metamorphic rock containing SiO₂ more than 80% indicate that the rock was originally
- granite
 - syenite
 - sandstone
 - shale
36. The garnet present in the lowest grade of metamorphism is
- spessartite
 - pyrope
 - andradite
 - grossularite
37. Retrograde metamorphism is also known as
- diaphthoresis
 - additive metamorphism

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- c) injective metamorphism
 - d) none of these
38. Metamorphism involves
- a) change in chemical composition
 - b) change in mineral composition only
 - c) both a and b
 - d) change in mineral composition and structure
39. Psammitic rocks are those which have been derived from
- a) gravel rocks
 - b) arenaceous rocks
 - c) argillaceous rocks
 - d) rudaceous rocks
40. Mylonite rock shows
- a) cataclastic fabric
 - b) granulitic fabric
 - c) hornfelsic fabric
 - d) foliated fabric
41. The term skarn refers to
- a) thermal metamorphic
 - b) contact metamorphic and commonly metasomatic
 - c) contact metamorphic and commonly metasomatic rock composed of lime silicate
 - d) none of these
42. Migmatites are characterized by
- a) granitic nature
 - b) high grade regional metamorphism
 - c) low grade metamorphism
 - d) both a and b
43. Eclogite are composed of
- a) omphacite
 - b) omphacite and garnet
 - c) garnet and feldspar
 - d) garnet and biotite
44. The Chitradurga schist belt is example of
- a) epidote amphibolites facies
 - b) greenschist facies
 - c) amphibolites facies
 - d) granulite facies
45. Enderbite is a type of
- a) khondite

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- b) gondite
 - c) charnokite
 - d) kodurite
46. Which planet has the highest density
- a) mercury
 - b) venus
 - c) earth
 - d) mars
47. Siderolites are
- a) iron meteorites
 - b) stony iron meteorites
 - c) stony meteorites
 - d) silicate meteorites
48. Aerolites are
- a) iron meteorites
 - b) iron-stony meteorites
 - c) stony meteorites
 - d) metallic meteorites
49. Tektites resemble
- a) obsidian
 - b) basalt
 - c) rhyolite
 - d) granochlorite
50. The upper layer of the mantle is rich in
- a) granitic composition
 - b) basic composition
 - c) ultrabasic composition
 - d) felsic composition
51. The upper layer of the crust is rich in
- a) silicon and iron
 - b) silicon and aluminium and magnesium
 - c) silicon and magnesium
 - d) diamond
52. The upper crust mainly consists of
- a) sandstone
 - b) shale
 - c) limestone
 - d) igneous and metamorphic
53. The Clarke oxygen in the crust is

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- a) 46.6
 - b) 32.7
 - c) 27.72
 - d) 10.25
54. Elements concentration in metals are
- a) more electropositive
 - b) less electropositive
 - c) neutrall
 - d) none of the above
55. Magma is characterized by
- a) composition
 - b) temperature
 - c) mobility
 - d) all of the above
56. Sedimentary apatite is known as
- a) gibbsite
 - b) petalite
 - c) collophane
 - d) polyhalite
57. Which is the most stable mineral towards weathering
- a) quartz
 - b) feldspar
 - c) hornblende
 - d) biotite
58. The polymorphs of Kaolinite are
- a) hallloysite
 - b) dickite and nacrite
 - c) hallloysite and dickite
 - d) dickite,nacrite and halloysite
59. The stability of mineral maybe defined in respect of
- a) temperature
 - b) pressure
 - c) chemical environment
 - d) all the above
60. The bulk chemical composition of the rock during metamorphism
- a) decrease
 - b) increase
 - c) constant
 - d) uncertain

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61. Eclogite is an
- olivine rock
 - olivine and pyroxene rock
 - garnet and pyroxene rock
 - garnet and olivine rock
62. The energy of the emitted X-rays depends upon the _____ of the atom and their intensity depends upon the _____
- Atomic number, amount of sample
 - Mass number, concentration of atoms
 - Mass number, amount of sample
 - Atomic number, concentration of atom
63. In X-ray fluorescence spectrometer, the relationship between the excitation intensity and the intensity of fluorescence does not depend on which of the following?
- Spectrum of the incident radiation
 - Angle of radiance
 - Molecular weight
 - Incident angle
64. If the absorption of electromagnetic radiation by matter results in the emission of radiation of same or longer wavelengths for a long or a short time, the phenomenon is termed as which of the following?
- Luminescence
 - Fluorescence
 - Phosphorescence
 - Spontaneous emission
65. If the absorption of electromagnetic radiation by matter results in the emission of radiation of same or longer wavelengths for a long or a LONG time, the phenomenon is termed as which of the following?
- Luminescence
 - Fluorescence
 - Phosphorescence
 - Spontaneous emission
66. X-ray diffractometers are not used to identify the physical properties of which of the following?
- metal
 - liquid
 - solid
 - gas
67. Using powder method of diffractometers, which of the following can be determined?

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- a) Percentage of K^+
 - b) Percentage of Na^+ and Cl^-
 - c) Percentage of KBr and $NaCl$
 - d) Percentage of Br^-
68. In powder method, the powder sample is contained in which of the following?
- a) Thin walled glass capillary tubes
 - b) Thin walled test tube
 - c) Thin walled curvettes
 - d) Thin walled flask
69. Which of the following is the most common instrument for photographic recording of diffraction patterns?
- a) Debye-Scherrer powder camera
 - b) Gamma camera
 - c) Geiger tube
 - d) Scintillation counter
70. Diffractometers are similar to which of the following?
- a) Optical grating spectrometer
 - b) Prism spectrometer
 - c) Photo multiplier
 - d) Photovoltaic cell
71. In powder diffractometer, the sharpness of the lines is greatly determined by which of the following?
- a) Quality of the sample, size of the slit
 - b) Quality of the slit, size of the sample
 - c) Thickness of the slit, amount of the sample
 - d) Number of slits, composition of the sample
72. What is [overtyping the text] ICP's principle is similar to which of the following?
- a) Flame emission spectroscopy
 - b) Fourier transforms spectroscopy
 - c) Atomic emission spectroscopy
 - d) Absorption spectroscopy
73. Solid samples are introduced into the ICP spectrometer using which of the following?
- a) Nebulizer
 - b) Curvette having glass windows
 - c) Probe
 - d) Laser ablation system
74. Atomisation or ionisation occurs at which of the following conditions?
- a) Vacuum pressure
 - b) Atmospheric pressure

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- c) Low pressure
- d) High pressure

75. Which of the following is not the characteristic of ICP spectrometer?

- a) Easy sample introduction
- b) It can trace multiple elements
- c) High detection limits
- d) Accurate

B. Fill up the blanks [15 (3 from each unit)]

1. Ultrabasic basalt rich in olivine is called _____
2. Kimberlite is a variety of _____
3. Lamprophyres generally occur as _____
4. Radiolarian and _____ are siliceous deposits
5. _____ is a term used for flexible sandstone
6. Micrite is formed of grains less than _____ microns in size
7. Guano are _____ deposits
8. Phlebitis is a _____ gneiss
9. _____ metamorphic rock indicates overburden pressure
10. Grain size _____ during metamorphism
11. Augen are _____
12. Diktyonitic are network of _____
13. The mass of the crust is _____ % that of the mantle
14. X-ray diffractometers provide _____ information about the compounds present in a solid sample
15. In Diffractometers, line intensities depend on _____ and kind of atomic reflection centre in each set of plates.

Key Answers

A. Multiple choice questions [replace x]

- | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|
| 1. a) | 2. c) | 3. b) | 4.c) | 5. a) | 6.c) | 7.c) |
| 8. d) | 9. c) | 10. a) | 11.d) | 12.c) | 13.c) | 14. a |
| 15. b) | 16. a) | 17. C) | 18.c) | 19. b) | 20. d | 21. d |
| 22.b) | 23. b) | 24. b) | 25. a) | 26. b) | 27. d) | 28. c) |
| 29. a) | 30. a) | 31. a) | 32. d) | 33. c) | 34. a) | 35. c) |
| 36. a) | 37. a) | 38. d) | 39. b) | 40. a) | 41. c) | 42. d) |
| 43. b) | 44. b) | 45. c) | 46. c) | 47. b) | 48. c) | 49. a) |
| 50. c) | 51. b) | 52. d) | 53. a) | 54. b) | 55. d) | 56. c) |
| 57. a) | 58. d) | 59. d) | 60. c) | 61. a) | 62. d) | 63. d) |
| 63. a) | 65. c) | 66. b) | 67. c) | 68. a) | 68. a) | 70. a) |
| 71. b) | 72. c) | 73. d) | 74. d) | 75. c) | | |

B. Fill up the blanks [replace x]

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1. oceanite
2. peridotite
3. dyke and sills
4. diatomaceous oozes
5. itacolumite
6. 4
7. phosphatic
8. veined
9. massive
10. increase
11. eye-like
12. veinlets
13. 0.6
14. Quantitative and qualitative
15. number