

COMMON P. G. ENTRANCE TEST – 2020

Test Booklet No. :

DEPT. OF HIGHER EDUCATION, GOVT. OF ODISHA

TEST BOOKLET

Subject Code **22**

Subject **GEOLOGY**

Time Allowed : 90 Minutes

Full Marks : 70

: INSTRUCTIONS TO CANDIDATES :

1. IMMEDIATELY AFTER THE COMMENCEMENT OF THE EXAMINATION, YOU SHOULD CHECK THAT THIS TEST BOOKLET **DOES NOT** HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. You have to enter your **Hall Ticket No.** on the Test Booklet in the Box provided alongside. **DO NOT** write *anything else* on the Test Booklet.
3. **YOU ARE REQUIRED TO FILL UP & DARKEN HALL TICKET NO. & TEST BOOKLET NO. IN THE ANSWER SHEET AS WELL AS FILL UP TEST BOOKLET SERIAL NO. & ANSWER SHEET SERIAL NO. IN THE ATTENDANCE SHEET CAREFULLY. WRONGLY FILLED UP ANSWER SHEETS ARE LIABLE FOR REJECTION AT THE RISK OF THE CANDIDATE.**
4. **This Test Booklet contains 70 items (questions). Each item (question) comprises four responses (answers). You have to select the correct response (answer) which you want to mark (darken) on the Answer Sheet. In case, you feel that there is more than one correct response (answer), you should mark (darken) the response (answer) which you consider the best. In any case, choose ONLY ONE response (answer) for each item (question).**
5. You have to mark (darken) all your responses (answers) **ONLY** on the **separate Answer Sheet** provided by using **BALL POINT PEN (BLUE OR BLACK)**. See instructions in the Answer Sheet.
6. All items (questions) carry equal marks. All items (questions) are compulsory. Your total marks will depend only on the number of correct responses (answers) marked by you in the Answer Sheet. **There is no negative marking.**
7. **After you have completed filling in all your responses (answers) on the Answer Sheet and after conclusion of the examination, you should hand over to the Invigilator the Answer Sheet issued to you. You are allowed to take with you the candidate's copy / second page of the Answer Sheet along with the Test Booklet, after completion of the examination, for your reference.**
8. Sheets for rough work are appended in the Test Booklet at the end.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE ASKED TO DO SO

1. The normal magnetic polarity epoch younger to Gilbert Reverse and older to Matuyama Reverse is known as _____.
(A) Gauss Normal
(B) Brunhes Normal
(C) Hutton Normal
(D) Gilbert Normal
2. Which supercontinent of the following existed during the Late Palaeozoic Era ?
(A) Rodinia
(B) Gondwana
(C) Panthalassa
(D) Pangea
3. Compared to Delhi, Earth's normal gravity field at Colombo is _____.
(A) Smaller as Sri Lanka is surrounded by water
(B) Larger as the Oceanic crust below Sri Lanka is shallower
(C) Smaller because of Colombo's geographic location
(D) Larger as Sri Lanka is isostatically compensated
4. Guyots are formed in _____.
(A) Oceans
(B) Mountains
(C) Deserts
(D) Riverbeds
5. The East- African rift valley is a good example of _____.
(A) Oceanic- oceanic convergent boundary
(B) Oceanic- continental convergent boundary
(C) Continent- continent divergent boundary
(D) Continent- continent transform boundary
6. Which of the following is the gem variety of olivine ?
(A) Amethyst
(B) Sapphire
(C) Aquamarine
(D) Peridot

7. The difference in number of faces in forms $\{hk1\}$ and $\{111\}$ in the holosymmetric class of the isometric system is _____.
- (A) 40
 - (B) 43
 - (C) 48
 - (D) 20
8. Two minerals P and Q were studied under the microscope. Mineral P is characterised by two orthogonal cleavages. Mineral Q has more than one set of cleavage, but not at right angles. Q also changes relief on the rotation of the stage. Identify P and Q from the following alternatives :
- (A) P- diopside, Q- calcite
 - (B) P- diopside, Q- hornblende
 - (C) P- hornblende, Q- calcite
 - (D) P- calcite, Q- diopside
9. Which is sodium rich mica ?
- (A) Biotite
 - (B) Muscovite
 - (C) Paragonite
 - (D) Lepidolite
10. Dodecahedron and trapezohedron are the common forms of _____.
- (A) Feldspar group
 - (B) Garnet group
 - (C) Mica group
 - (D) Amphibole group
11. Chemical composition of Earth's core is similar to that of _____.
- (A) Chondritic meteorite
 - (B) Achondritic meteorites
 - (C) Stony meteorite
 - (D) Iron meteorites

12. The most abundant element in the Earth's crust is _____.
- (A) Aluminium
 - (B) Oxygen
 - (C) Iron
 - (D) Carbon
13. Which phenomenon is responsible for the production of about 80% of the Earth's internal heat ?
- (A) Radioactive decay
 - (B) Magnetic decay
 - (C) Friction between tectonic plates
 - (D) The accelerated spin of the inner core
14. What is the third most abundant element (after H and He) in the solar system ?
- (A) O
 - (B) Fe
 - (C) Si
 - (D) Ni
15. What is the average geothermal gradient in the top 15 km of a continental crust ?
- (A) $3^{\circ}\text{C}/\text{km}$
 - (B) $30^{\circ}\text{C}/\text{km}$
 - (C) $50^{\circ}\text{C}/\text{km}$
 - (D) $100^{\circ}\text{C}/\text{km}$
16. An ore body is dipping 30 degree towards west on a flat topography. At what distance in metres should a bore hole be placed so that it intersects the ore body perpendicularly at a vertical depth of 70 metre ?
- (A) 121.2
 - (B) 161.63
 - (C) 140.4
 - (D) 70.63
17. An outcrop in which younger rocks surround older rocks is known as _____.
- (A) Overlap
 - (B) Offlap
 - (C) Outlier
 - (D) Inlier

18. If the heave of a fault is zero, then the fault is _____.
- (A) High angle fault
 - (B) Low angle fault
 - (C) Horizontal fault
 - (D) Vertical fault
19. Structure contours of a bedding plane at 150m interval are spaced in such a manner that the horizontal equivalent is also 150m. The dip of the bedding plane is _____.
- (A) 30°
 - (B) 45°
 - (C) 60°
 - (D) 90°
20. A 'culmination' may be described as a combination of _____.
- (A) Two anticlines of different sets of folding
 - (B) Two synclines of different sets of folding
 - (C) An anticline and a syncline of same set of folding
 - (D) An anticline and a syncline of different sets of folding
21. Quartz is a diagnostic mineral in _____.
- (A) Oversaturated rock
 - (B) Saturated rock
 - (C) Under saturated rock
 - (D) Unsaturated rock
22. The degree of freedom on the liquidus curve of a binary system is _____.
- (A) 0
 - (B) 1
 - (C) 2
 - (D) 3
23. Which one of the following igneous rocks has the composition of granite and a predominance of large mineral crystal ?
- (A) Basalt
 - (B) Rhyolite
 - (C) Gabbro
 - (D) Pegmatite

24. Plagioclase occurs in anorthosite as well as in granodiorite. The plagioclase composition in granodiorite is _____.
- (A) More or less similar to that in anorthosite
 - (B) More potassic
 - (C) More calcic
 - (D) More sodic
25. The igneous rock comprising mainly of olivine and orthopyroxene is called as _____.
- (A) Wherlite
 - (B) Gabbro
 - (C) Harzburgite
 - (D) Websterite
26. In a flow regime, the bedforms formed with increasing current velocity are _____.
- (A) Dunes - ripples - plane beds - antidunes
 - (B) Ripples - plane beds - dunes - antidunes
 - (C) Antidunes - dunes - ripples - plane beds
 - (D) Plane beds - ripples - dunes - antidunes
27. A turbidite deposit contains the following in a sequence of _____.
- (a) Massive beds
 - (b) Upper parallel lamination
 - (c) Lower parallel lamination
 - (d) Structureless mud
 - (e) Ripple cross lamination
- (A) a – e – b – c – d
 - (B) b – a – e – d – c
 - (C) a – c – e – b – d
 - (D) d – c – e – b – a
28. In rock records, extreme floods and rainfall events are likely to be represented by thick bedded units of _____.
- (A) Poorly sorted sediments
 - (B) Large scale cross beds
 - (C) Parallel laminated fine sand
 - (D) Imbricated gravels

29. Mud supported limestone containing greater than 10% allochem is called _____.
- (A) Packstone
 - (B) Wackestone
 - (C) Grainstone
 - (D) Mudstone
30. Which of the following structures are developed in upper flow regime ($F > 1$) ?
- (A) Ripples
 - (B) Dunes
 - (C) Antidunes
 - (D) All of these
31. In ACF diagram, "F" stands for _____.
- (A) $F = \text{FeO}$
 - (B) $F = \text{FeO} + \text{MgO} + (\text{Na}_2\text{O} + \text{K}_2\text{O})$
 - (C) $F = \text{FeO} + \text{MgO} + \text{MnO}$
 - (D) $F = \text{FeO} - (\text{MgO} + \text{MnO})$
32. Which pair of rock types best describes the products of metamorphism in the contact aureole ?
- (A) Slate and schist
 - (B) Schist and hornfels
 - (C) Schist and skarn
 - (D) Hornfels and skarn
33. The metamorphic facies diagnostic of subduction zone is _____.
- (A) Hornblende facies
 - (B) Pyroxene hornfels
 - (C) Blue schist
 - (D) Granulite
34. A metamorphic rock consisting of pyroxene, plagioclase and quartz and exhibiting hornfelsic texture has undergone _____ metamorphism.
- (A) Regional
 - (B) Contact
 - (C) Cataclastic
 - (D) Impact

35. Greisenisation associated with Sn- W mineralisation involves the replacement of the original mineral assemblage by _____.
- (A) Quartz + calcite
 - (B) Muscovite + chlorite
 - (C) Quartz + chlorite
 - (D) Quartz + muscovite
36. **Venus** belongs to phylum _____.
- (A) Brachiopoda
 - (B) Pelecypoda
 - (C) Gastropoda
 - (D) Cephalopoda
37. Which one of the following plant fossils indicates Triassic age of the sediments ?
- (A) **Ptillophyllum**
 - (B) **Trizygia**
 - (C) **Dicroidium**
 - (D) **Cordaites**
38. Suture line with rounded saddles and angular lobes is called as _____.
- (A) Orthoceratite type
 - (B) Ceratite type
 - (C) Goniatite type
 - (D) Nautiloid type
39. Which one among the following is a phosphatic micro-fossil ?
- (A) Foraminifera
 - (B) Cocolithophore
 - (C) Radiolaria
 - (D) Conodont
40. "Ediacaran fossils" have significance in determining the _____.
- (A) Archean / Proterozoic boundary
 - (B) Cretaceous / Tertiary boundary
 - (C) Precambrian / Cambrian boundary
 - (D) Permian / Triassic boundary

41. Which one of the following represent the longest time period ?
- (A) Precambrian
 - (B) Mesozoic
 - (C) Palaeozoic
 - (D) Cenozoic
42. Kaladgi Group belongs to _____.
- (A) Archaean
 - (B) Proterozoic
 - (C) Palaeozoic
 - (D) Mesozoic
43. Dhokpathan Formation is overlain by _____.
- (A) Pinjor Formation
 - (B) Tatrot Formation
 - (C) Nagri Formation
 - (D) Chinji Formation
44. Deccan flood basalts are considered to be related to _____.
- (A) Hawaii hotspot
 - (B) Iceland hotspot
 - (C) Reunion hotspot
 - (D) Easter hotspot
45. Which among the following microscopic bands of coal is the brightest ?
- (A) Vitrain
 - (B) Clarain
 - (C) Durain
 - (D) Fusain
46. The volume of water that an aquifer releases from or takes into storage per unit surface area of aquifer per unit drop of water table or piezometric surface is called _____.
- (A) Storage coefficient or storativity
 - (B) Transmissivity
 - (C) Specific yield
 - (D) Safe yield

47. Zone of saturation is also known as _____.
- (A) Vadose zone
 - (B) Capillary zone
 - (C) Phreatic zone
 - (D) Aeration zone
48. When an artesian condition is developed ?
- (A) Piezometric surface falls below the bottom of upper confining bed
 - (B) Water table is perched
 - (C) Aquifer is unconfined
 - (D) Piezometric surface is above the groundwater table
49. Maximum porosity is seen in which soil _____.
- (A) Sandy soil
 - (B) Silty soil
 - (C) Clayey soil
 - (D) Loam soil
50. A unit which is semi-permeable and does not yield any significant quantity of groundwater is called _____.
- (A) Aquiclude
 - (B) Aquifer
 - (C) Aquitard
 - (D) Artesian aquifer
51. Chalk Hill of Salem, Tamil Nadu is famous for _____.
- (A) Limestone
 - (B) Barite
 - (C) China clay
 - (D) Magnesite
52. Commercial magnesite deposit can be hosted in _____.
- (A) Serpentinite
 - (B) Potassic granite
 - (C) Gabbro
 - (D) Nepheline syenite

53. Match the following :

Group – I

- (a) Lead
- (b) Aluminium
- (c) Chromite
- (d) Muscovite

Group – II

- (i) Magmatic
- (ii) Pegmatitic
- (iii) Residual
- (iv) Hydrothermal

- (A) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)
- (B) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)
- (C) (a)-(iii), (b)-(ii), (c)-(iv), (d)-(i)
- (D) (a)-(i), (b)-(ii), (c)-(iii), (d)-(iv)

54. 'Comb structure' with 'symmetrical banding' is formed by _____.

- (A) Early magmatic process
- (B) Hydrothermal process
- (C) Chemical sedimentary process
- (D) Residual concentration process

55. Blue asbestos is another name of _____.

- (A) Amosite
- (B) Tremolite
- (C) Actinolite
- (D) Crocidolite

56. If a stream maintains the same course after upliftment in an area, it is known as _____.

- (A) Consequent
- (B) Subsequent
- (C) Resequent
- (D) Antecedent

57. Which of the following is a wind-blown deposit ?

- (A) Till
- (B) Bajada
- (C) Varve
- (D) Loess

58. Point bar deposit is associated with _____.

- (A) Braided river
- (B) Estuary
- (C) Meandering river
- (D) Beach

59. The geomorphic feature horns are formed by _____.
- (A) Wind erosion (B) River erosion
(C) Wind deposition (D) Glacial erosion
60. Which glacial feature can not be used to predict the glacial movements ?
- (A) Eskers (B) Crescentic gouges
(C) Horn (D) Drumlin
61. Brazilian test is used for the _____.
- (A) Determination of tensile strength of rocks
(B) Determination of indirect compressive strength of rocks
(C) Determination of coefficient of compressibility of soils
(D) Determination of in situ stress

62. Match the following :

Group – I

- (a) Creep
(b) Earth flow
(c) Slump

Group – II

- (i) Tongue- shaped mass movement
(ii) Curved tree trunks
(iii) Scree formation at the base
(iv) Curved surface of rupture

- (A) (a)-(ii), (b)-(i), (c)-(iv)
(B) (a)-(i), (b)-(ii), (c)-(iii)
(C) (a)-(ii), (b)-(iv), (c)-(i)
(D) (a)-(iv), (b)-(ii), (c)-(iii)

63. The most sluggish process of mass wasting is _____.
- (A) Creep (B) Flow
(C) Slide (D) Fall

64. An adit is an underground excavation, which is _____.
- (A) A horizontal opening giving access to main tunnel
(B) A horizontal opening used for transporting water to powerhouse
(C) A vertical opening used for multipurpose
(D) An inclined opening providing access to main tunnel

65. Which of the following is the most favourable geological condition for the construction of a gravity dam ?
- (A) Strata dipping downstream in narrow valley
 - (B) Strata dipping upstream in wide valley
 - (C) Strata dipping downstream in wide valley
 - (D) Strata dipping towards abutment in narrow valley
66. How a large city generally appears on a 1 : 25000 scale map ?
- (A) As a single point
 - (B) As a cluster of points, lines and polygons
 - (C) As a polygon
 - (D) As a cluster of points
67. The RF of the geological map prepared on a scale of 5cm = 1km is _____.
- (A) 1 : 20000
 - (B) 1 : 2000
 - (C) 1 : 10000
 - (D) 1 : 1000
68. In a truly vertical aerial photograph, _____.
- (A) The principal point and nadir point only coincide
 - (B) The principal point and isocentre only coincide
 - (C) The nadir point and isocentre only coincide
 - (D) The principal point, nadir point and isocentre must all coincide
69. During refination of bauxite the waste generated is _____.
- (A) Red mud
 - (B) Fly ash
 - (C) Bottom ash
 - (D) Char
70. A flash flood is a flood that _____.
- (A) Occurs in rural areas for a longer duration due to drizzle
 - (B) Occurs in urban areas
 - (C) Occurs suddenly and unexpectedly for a short duration
 - (D) Is caused by drying of drains



SPACE FOR ROUGH WORK