

# MIZORAM PUBLIC SERVICE COMMISSION

## GENERAL COMPETITIVE EXAMINATIONS FOR RECRUITMENT TO THE POST OF RESEARCH INVESTIGATOR (ARCHAEOLOGY) CONTRACT UNDER DEPARTMENT. AUGUST, 2016.

### GEOLOGY PAPER-II

Time Allowed : 2 hours

Full Marks : 150

*All questions carry equal mark of 2 each. Attempt all questions.*

1. The study of faunal succession allows \_\_\_\_\_ .
  - (a) Matching of similarly-aged rocks from different outcrops
  - (b) Absolute dating of fossil-bearing strata
  - (c) Recognition of the kings of the beasts in past times
  - (d) The study of habits of extinct mammals
2. Which of the following will not make a fossil?
  - (a) Animal footprints
  - (b) Decomposed organic material
  - (c) Loose animal bones
  - (d) Plant impressions (casts)
3. The body of an animal is more likely to become fossilized if it:
  - (a) Is left on the surface of the ground
  - (b) Does not contain bones or other hard body parts
  - (c) Is buried deeply in the ground
  - (d) All of the above are about equally likely to result in fossilization
4. "Petrification" is a type of fossilization which involves
  - (a) Preservation of the original specimen
  - (b) Preservation of entire organism
  - (c) Preservation of soft parts only
  - (d) Replacement of the original specimen
5. The term "Living Fossil" refers to
  - (a) A species which was thought to be extinct but which is in fact living
  - (b) A species which has acquired the characters of its predecessors
  - (c) A species which has retained all the primitive characters of its ancestors and has survived much longer than its counterparts
  - (d) A species which is at its acme of evolution
6. The study of Trace Fossil is known as
  - (a) Paleo-ecology
  - (b) Syn-ecology
  - (c) Ichthyology
  - (d) Ichnology

7. A cast is which of the following?
  - (a) A footprint
  - (b) Rounded pebbles in sedimentary rocks
  - (c) A mold filled with sediments that produces a copy of the original fossil
  - (d) Layers of hardened rock
  
8. An organism often used as an index fossil is a/an
  - (a) Arca
  - (b) Trilobite
  - (c) Conus
  - (d) Belemnites
  
9. When the hard parts of an organism decay and leave a cavity in the rock, what forms?
  - (a) Mold fossil
  - (b) Cast fossil
  - (c) Imprint fossil
  - (d) Index fossil
  
10. What can fossils tell us about past animals and life?
  - (a) Information about the past environment
  - (b) Where animals came from
  - (c) What animals from the past looked like
  - (d) All of these
  
11. Marine paleoecologists studying local faunas usually concerned primarily with
  - (a) Benthonic organisms
  - (b) Pelagic organisms
  - (c) Deposit feeders
  - (d) Suspension feeders
  
12. The distribution and abundance of particular species in marine environment is not affected by
  - (a) Temperature
  - (b) Salinity
  - (c) Water depth
  - (d) Turbidity
  
13. Fossils may be found in an unaltered state in:
  - (a) Limestones
  - (b) Shales
  - (c) Amber
  - (d) Cherts
  
14. Which of the following best represents Lamarck's ideas on the evolutionary process?
  - (a) Survival of the fittest
  - (b) Inheritance of acquired characteristics
  - (c) Neutral drift
  - (d) Punctuated equilibrium
  
15. Which of the following is not a part of Darwin's theory of natural selection?
  - (a) Individuals of a population vary
  - (b) Organisms tend to over-reproduce themselves
  - (c) Modifications an organism acquires during its lifetime can be passed to its offspring
  - (d) Variations possessed by individuals of a population are heritable
  
16. The struggle for existence refers to:
  - (a) The hardships newborn offspring face due to predation
  - (b) The struggle for animals who cannot breathe
  - (c) Members of each species compete regularly to obtain food and living space
  - (d) The hardships between parents of raising offspring

17. Microevolution, or evolution at its smallest scale, occurs when
- (a) an individual's traits change in response to environmental factors
  - (b) a community of organisms changes due to the extinction of several dominant species
  - (c) a new species arises from an existing species
  - (d) a population's allele frequencies change over a span of generations
18. Which of the following is an example of convergent evolution?
- (a) similar amino acid sequences of hemoglobin in humans and chimpanzees
  - (b) similar bones in the forelimbs of horses and bats
  - (c) similar body shape of dolphins and fish
  - (d) different beak shapes of Galapagos finches
19. The brain capacity of modern man is:
- (a) 1500 cubic centimeters
  - (b) 1000 cubic centimeter
  - (c) 800 cubic centimeters
  - (d) 400 cubic centimeters
20. The most apparent change during the evolutionary history of *Homo sapiens* is traced in
- (a) loss of body hair
  - (b) walking upright
  - (c) shortening of the jaws
  - (d) remarkable increase in the brain size
21. Which of the following is the most primitive ancestor of man?
- (a) *Homo habilis*
  - (b) *Ramapithecus punjabicus*
  - (c) *Australopithecus*
  - (d) *Homo neanderthalensis*
22. Hominids originated during
- (a) miocene
  - (b) pliocene
  - (c) oligocene
  - (d) palaeocene
23. The earliest fossil of prehistoric man is
- (a) *Dryopithecus*
  - (b) *Ramapithecus*
  - (c) *Sivapithecus*
  - (d) *Australopithecus*
24. The extinct representative of the present day living man is
- (a) cro magnon man
  - (b) erect man
  - (c) java man
  - (d) nanderthal man
25. The modern man differs from the apes in
- (a) absence of tail
  - (b) sparse body hair
  - (c) broader chest due to flattening of sternum
  - (d) arms shorter than legs
26. The chronological order of human evolution from early to the recent is
- (a) *Ramapithecus*- *Australopithecus*- *Homo habilis*- *Homo erectus*
  - (b) *Ramapithecus*-*Homo habilis*- *Australopithecus*- *Homo erectus*
  - (c) *Pithecanthropus pekinensis*- *Dryopithecus*- *Homo habilis*- *Homo erectus*
  - (d) *Australopithecus*- *Homo erectus*- *Ramapithecus*-*Homo habilis*



27. The idea that geologic processes occurring now are the same as those in the past is
- (a) uniformitarianism
  - (b) catastrophism
  - (c) modern geology
  - (d) paleontology
28. A designated type of unit consisting of accessible rocks that contain clear-cut characteristics which are representative of a particular lithostratigraphic unit is
- (a) Lithosome
  - (b) Stratotype
  - (c) Biozone
  - (d) Lineage Zone
29. In general, the law of superposition states that in an undeformed sequence of sedimentary rocks, each layer is
- (a) about the same age
  - (b) older than the one above it
  - (c) older than the one below it
  - (d) thicker than the one above it
30. Which type of geologic event has to occur to create an angular unconformity?
- (a) uninterrupted deposition of sediment
  - (b) igneous intrusion into layered rock
  - (c) sediment deposited on older, eroded igneous rock
  - (d) folding or tilting of rock layers
31. The largest expanse of time on the geologic time scale is the
- (a) eon
  - (b) era
  - (c) epoch
  - (d) period
32. Which of the following is the fundamental biostratigraphic unit?
- (a) Stages
  - (b) Systems
  - (c) Zone
  - (d) Epoch
33. Periods in geological time scale are defined on the basis of
- (a) the absolute age dates applied to them
  - (b) the unique fossil content of the corresponding rocks
  - (c) Lithological characteristics of the of the corresponding rocks
  - (d) Mineralogical characteristics of the corresponding rocks
34. Rock units formed at different places exactly at the same time are known as:
- (a) Homotaxial-beds
  - (b) Synchronous-beds
  - (c) Hetrotaxial beds
  - (d) None of these
35. The lines joining the points of equal thickness of a particular stratigraphic units are known as:
- (a) Isobars
  - (b) Isobaths
  - (c) Isohyets
  - (d) Isopaches
36. The time rock unit *stage* corresponds with ..... of the time units
- (a) Epoch
  - (b) Age
  - (c) Chron
  - (d) Era

37. ....era represents the vast bulk of Earth's geologic history and covers nearly 90% of Earth's history
- (a) Precambrian (b) Paleozoic  
(c) Cenozoic (d) Quaternary
38. The worst mass extinction in the planet's history, obliterating up to 96% of marine species and similar numbers of land animals happened during
- (a) Triassic (b) Jurassic  
(c) Permian (d) Miocene
39. Which of the following is not applicable for stratigraphic correlation?
- (a) Fossils (b) Unconformity  
(c) Lithology (d) Faults and folds
40. Which of the following is the correct sequence of stratigraphic set up of Northeast India?
- (a) Jaintia group- Barail group-Disang group - surma group  
(b) Jaintia group- Disang group- Barail group - surma group  
(c) Jaintia group- surma group- Disang group - Barail group  
(d) Jaintia group - Barail group - surma group - Disang group
41. Renji and Jenam formation belong to which group?
- (a) Barail (b) Surma  
(c) Jaintia (d) Disang
42. Bhuban sub groups are classified based on their
- (a) Biotic content (b) Lithological characteristics  
(c) Sand-shale ratio (d) Mineralogical characteristics
43. The Reservoir rock of Upper Assam oil field is-
- (a) Barail Coal Shale Formation (b) Tipam Sandstone Group  
(c) Jaipur Formation (d) Metamorphic Basement
44. Ophiolite suite of rocks exposed in Nagaland and Manipur are due to long period of upheaval during
- (a) Cenozoic era (b) Paleozoic era  
(c) Mesozoic era (d) Precambrian era
45. Which of the following rock units was formed during Neoproterozoic period?
- (a) Tipam Sandstone (b) Sylhet Trap  
(c) Myellium Granite (d) Shella Formation
46. The boundary between the Mahadek and Langpar Formation of Meghalaya represents-
- (a) PT (b) KT  
(c) Pliocene-Pleistocene (d) Precambrian-Cambrian
47. The correct sequence of encountering oil in drilling well is-
- (a) Water—Gas—Oil (b) Oil—Gas—Water  
(c) Gas—Water—Oil (d) Gas—Oil—Water

48. The age of Sylhet Trap is  
(a) Cretaceous (b) Lower Eocene  
(c) Paleocene (d) Oligocene
49. North-dipping thrust fault at the southern boundary of the Shillong Plateau is  
(a) Oldham fault (b) Dawki fault  
(c) Brahmaputra fault (d) Kopili fault
50. Which of the following tectono-geological provinces represent the eastern corner of NE India?  
(a) Mishmi block (b) Mikir Hills  
(c) Indo-Myanmar mobile belt (d) Tethyan provinces
51. In North Eastern India, Pre cambrian rocks are mainly exposed in  
(a) Nagaland, Meghalaya and Assam (b) Manipur, Nagaland, Assam  
(c) Meghalaya, Assam, Arunachal Pradesh (d) Meghalaya, Manipur, Nagaland
52. Basal conglomerate in Meghalaya represent the boundary between  
(a) Precambrian gneissic complex and Shillong Group  
(b) Shillong group and granite plutons  
(c) Disang group and barail group  
(d) Jaintia group and khasi group
53. Which of the following are isotopes?  
(a) atoms with the same number of protons but different number of neutrons  
(b) atoms with the same number of neutrons  
(c) atoms with the same number of electrons  
(d) atoms with the same number of protons and neutrons
54. What does a scientist need to know to figure out the absolute age of a rock?  
(a) the rate of decay for all elements in the rock  
(b) the half-life of a radioactive element in the rock  
(c) the rate of decay for a radioactive element in the rock  
(d) the rate of decay of the rock's half-life
55. For what purpose do geologists use relative dating?  
(a) to determine which rock layer in a canyon wall formed first  
(b) to find the age of a rock layer  
(c) to determine how a rock's composition has changed over time  
(d) to identify past life forms that once lived in a rock layer
56. Which of the following cannot be used for relative dating?  
(a) law of original horizontality (b) uniformitarianism  
(c) primary structures (d) biotal succession
57. Absolute (radiometric) dating is of greater significance for the division of  
(a) Paleozoic (b) Tertiary

- (c) Mesozoic (d) Precambrian

58. Which of the following is an example of absolute dating?

- (a) Stratigraphy (b) F-U-N trio  
(c) Dendrochronology (d) Taphonomy

59. Radiocarbon dating is used to date

- (a) geologic events up to 75,000 years ago.  
(b) geologic events up to 10,000 years ago.  
(c) geologic events more than 1 million years ago  
(d) all geologic events of the past

60. How much C-14 will remain after five half-lives?

- (a)  $1/8^{\text{th}}$  (b)  $1/16^{\text{th}}$   
(c)  $1/32^{\text{nd}}$  (d)  $1/64^{\text{th}}$

61. Which of the following is not a major contributor to the greenhouse effect?

- (a) carbon dioxide (b) carbon monoxide  
(c) chlorofluorocarbons (d) nitrous oxide

62. Which of the following is not a result of global warming?

- (a) El nino (b) La nino  
(c) Glacial melting (d) Tornado

63. Choose the wrong statement:

Pollen analysis can be used

- (a) to determine the relative age of a given bed  
(b) to determine the tectonic set up of a particular area  
(c) to reconstruct past vegetation  
(d) to reconstruct palaeoclimatic conditions

64. Thermoluminescence dating is only usable for dating

- (a) Insulating material (b) Metallic artifacts  
(c) Rocks (d) Plant fossils

65. The main factor of a series of glacials and interglacials during Pleistocene is believed to be

- (a) Carbon cycle (b) Sun-Moon attraction  
(c) Green house gases (d) Milankovitch cycles

66. In an examination, Mohan scored 140 points, which are 20 points above 40%, and Gopal scored 70%. The points scored by Gopal are:



- (a) 210 (b) 275  
(c) 280 (d) 440

67. Consider the table given below in which the numbers bear certain relationship among themselves along the rows:

29	13	18
33	x	19
30	27	3

Which one of the following numbers is the missing number indicated above by x?

- (a) 19 (b) 8  
(c) 15 (d) 14

**Directions for Questions 68 to 70: Read the following passage and answer the items that follow:**

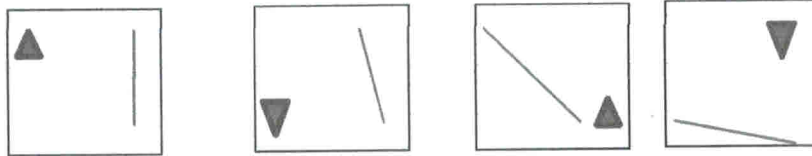
We started pitching the highest camp that has ever been made. Everything took five times as long as it would have taken in a place where there was enough air to breathe; but at last we got the tent up and when we crawled in, it was not too bad. There was only a light wind, and inside it was not too cold for us to take off our gloves. At night most climbers take off their boots; but I prefer to keep them on. Hillary, on the other hand, took off and laid them next to his sleeping bag.

68. What does the expression "pitching the highest camp" imply?  
(a) They reached the summit of the highest mountain in the world.  
(b) So far nobody has ever climbed that high.  
(c) Those who climbed that high earlier did not pitch that high.  
(d) There were too many climbers and needed to pitch a big camp.
69. They took a long time to finish the work because  
(a) There was not enough air to breathe (b) They were very tired  
(c) It was very dark (d) It was very cold
70. When they crawled into the tent  
(a) They did not take off their gloves though it was not cold  
(b) They took off their gloves because it was not very cold  
(c) They could not take off their gloves because it was very cold

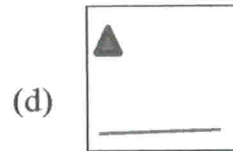
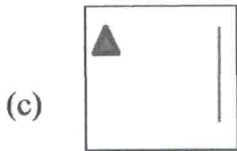
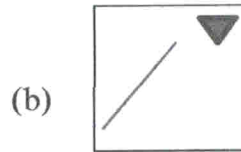
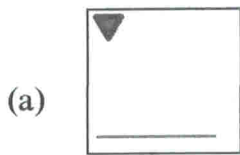


(d) They took off their gloves though it was very cold

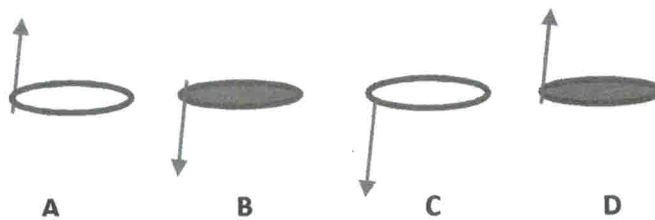
71. The elements of the problem figures given below are changing with a certain rule as we observe them from left to right:



According to this rule, which of the following would be the next figure if the changes were continued with the same rule?



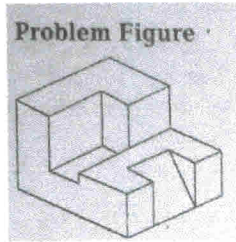
72. Single out the odd man.



- (a) A
- (c) C

- (b) B
- (d) D

73. Count the number of surfaces in the given image.



- (a) 18 (b) 15  
(c) 14 (d) 16

74. Five balls of different colours are to be placed in three boxes of different sizes. Each box can hold all five balls. In how many different ways we can place balls so that no box remains empty?

- (a) 60 (b) 150  
(c) 300 (d) 600

75. Consider the following statements:

1. All X-brand cars parked here are white.
2. Some of them have radial tyres.
3. All X-branded cars manufactured after 1986 have radial tyres.
4. All cars are not X-branded.

Which one of the following conclusions can be drawn from the above statements?

- (a) Only white cars are parked here.  
(b) Some white X-branded cars with radial tyres are parked here.  
(c) Cars other than X-brand cannot have radial tyres.  
(d) Most of the X-brand cars are manufactured before 1986.

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