

GOVERNMENT ZIRTIRI RESIDENTIAL SCIENCE COLLEGE

SUBJECT: GEOLOGY

Name of Paper: Economic & Applied Geology

PAPER: IV

IV SEMESTER

A : Choose the correct answer : (25 Marks)

1. Ore body forms at the same time as the host rock body
 - (i) Syngenetic
 - (ii) Epigenetic
 - (iii) Magmatic deposit
 - (iv) Hydrothermal deposit
2. Discordant ore bodies are
 - (i) Tabular, extensive and short in two dimension
 - (ii) Disseminated, dispersed throughout the host rock
 - (iii) Both (a) and (b)
 - (iv) None of the above
3. Volcanic hosted massive sulphide deposits contain
 - (i) concordant, lens, mound
 - (ii) Saucer shaped
 - (iii) Tabular
 - (iv) All of the above
4. The internal earth processes responsible for the formation of ore deposit
 - (i) Endogenic processes
 - (ii) Exogenic processes
 - (iii) Magmatic processes
 - (iv) Hydrothermal processes
5. An aggregate of metalliferous minerals
 - (i) Ore
 - (ii) gangue
 - (iii) Oxide
 - (iv) Tenor
6. An entrance to an underground mine which is horizontal or nearly horizontal, by which the mine can be entered, drained of water, ventilated, and minerals extracted at the lowest convenient level
 - (i) Adit
 - (ii) Tunnel
 - (iii) Shaft
 - (iv) Winse
7. A horizontal underground passageway that provides access to mining operations and is usually bored from the mining shaft at near right angles to the strike of a vein or ore body
 - (i) Tunnel
 - (ii) Shaft
 - (iii) Adit
 - (iv) Cross-cut
8. Used when ore bodies lie near the surface
 - (i) Open pit
 - (ii) Terrace mining
 - (iii) Strip mining
 - (iv) Contour strip mining

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9. Room and pillar is a type of
(i) Breast stopping (ii) Combined stopping
(iii) Overhand stopping (iv) Underhand stopping
10. Mechanical excavation methods
(i) Open-pit (ii) Placer
(iii) Solution mining (iv) All of the above
11. Direct methods for geological exploration technique involve examination of rocks or materials of the underground by
(i) Drill holes (ii) Trial pits
(iii) Galleries (iv) All of the above
12. The electrical energy produced by the ore body itself is directly measured and outside energizing force is required
(i) Self potential method (ii) Equipotential method
(iii) Electromagnetic methods (iv) Resistivity methods
13. The conditions where map show depart from average conditions for a particular place at a given time of year.
(i) Anomaly map (ii) Assay map
(iii) Isograde map (iv) None of the above
14. Beams of positively charged particles which are the nuclei of helium atoms
(i) Alpha-rays (ii) Beta-rays
(iii) Gamma-rays (iv) None of the above
15. Small charges of explosives are detonated in shallow boreholes drilled in the surface rocks. The waves thus generated are transmitted through the rocks and are picked up by a series of geophones carefully spaced along a line of traverse.
(i) Seismic survey (ii) Radiometric survey
(iii) Gravity survey (iv) Magnetic survey
16. The capacity of a stone to withstand bending loads is defined as
(i) Compressive strength (ii) Transverse strength
(iii) Porosity (iv) Density
17. Which layer is most suitable for the plinth of a bridge?
(i) Gravel (ii) Sandstone
(iii) Limestone (iv) Shale
18. The two adjacent aerial photographs are known as
(i) Stereo-net (ii) Stereoscope
(iii) Stereo-pairs (iv) Stereo-map
19. Wavelength of visible light ranges between
(i) 0.3-0.5 micron (ii) 0.3-0.6 micron
(iii) 0.4-0.6 micron (iv) 0.4-0.7 micron

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20. Radar is an example of
(i) active sensor (ii) passive sensor
(iii) aerial photography (iv) photogrammetry
21. The study of the interrelationship of geologic materials and processes with water is called
(i) Hydrology (ii) Geohydrology
(iii) Hydrogeology (iv) Meteorology
22. All the water occurring in the zone of saturation is referred to as
(i) Phreatic water (ii) Vadose water
(iii) Water table (iv) Meteoric water
23. Naturally uniform grained rocks have-
(i) high porosity (ii) high permeability
(iii) high porosity and low permeability (iv) high porosity and high permeability
24. A relatively impermeable geologic formation which doesn't have interconnected pores is
(i) Aquitard (ii) Aquiclude
(iii) Aquifuge (iv) Aquifer
25. With more ions in the water, the water's electrical conductivity (EC)
(i) increases (ii) decreases
(iii) does not change (iv) equals TDS

B : Fill up the blanks : (15 Marks)

1. The process of applying heat to ore in order to extract a base metal is _____
2. _____ is all other minerals present in the ore which are not of any economic interest.
3. _____ is the process of formation of ore at some later time after the host rock body has formed.
4. _____ is excavating a vertical or near-vertical tunnel from the top down, where there is initially no access to the bottom
5. Small shafts may be excavated upwards from within an existing mine as long as there is access at the bottom, in which case they are called _____
6. _____ are concentrations of heavy minerals, usually within loose alluvium that can easily be excavated and washed
7. The gravimetric survey is based on the measurement of _____ contrast between the anomaly producing body and the surrounding rock.
8. Geiger Mueller counter instrument is fitted with an ionization chamber, meters and count registers. These make it possible to measure the intensity of _____
9. An isograd map is a plane constant metamorphic grade in the field, it separates _____ of different metamorphic index minerals.

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10. The rock which possesses very high compressive strength is _____
11. Geologically, _____ classes of tunnels are recognized.
12. Polar orbiting satellites are generally placed at an altitude range of _____
13. What is the process of movement downwards of vadose water called _____
14. In the zone of aeration the pore water pressure is _____ atmospheric pressure.
15. _____ is also called a water-table aquifer.

Key Answers (MCQ)

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|---------|----------|-----------|-----------|----------|---------|-----------|
| 1. (i) | 2. (iii) | 3. (iv) | 4. (i) | 5. (i) | 6. (ii) | 7. (iv) |
| 8. (i) | 9. (i) | 10. (i) | 11. (iv) | 12. (i) | 13. (i) | 14. (i) |
| 15. (i) | 16. (ii) | 17. (ii) | 18. (iii) | 19. (iv) | 20. (i) | 21. (iii) |
| 22. (i) | 23. (i) | 24. (iii) | 25. (i) | | | |

Key Answer (Fill up the blanks) :

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|-------------------|---------------|------------------------|
| 1. Smelting | 2. Gangue | 3. Epigenetic |
| 4. Shaft mining | 5. Raises | 6. Placer deposits |
| 7. Density | 8. Gamma rays | 9. Metamorphic zones |
| 10. Igneous rocks | 11. 2 | 12. 700-1500km |
| 13. Infiltration | 14. Less than | 15. Unconfined aquifer |