Mark Scored:

KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Level : B. Tech.
Year : III
Course : ENVE 207
Semester : I

Exam Roll No. :
Time: 30 mins.
F. M. : 20

Registration No. :
Date 17 FEB 2019

SECTION "A"
[20 Q × 0.5 = 10 marks]

Mark "X" in the appropriate box.

1. The location on the earth's surface vertically above the focus of an earthquake.
   [ ] Hypocentre
   [ ] Epicenter
   [ ] Seismic Center
   [ ] Metacentre

2. ---------- channels occur when the sediments load is transported by a stream and is greater than the carrying capacity of stream
   [ ] Braided
   [ ] sediments
   [ ] sinus
   [ ] meandering

3. The term refers to unconsolidated, generally fragments of rocks greater than 25.6 mm in diameter.
   [ ] Boulder
   [ ] Gravel
   [ ] Sand
   [ ] Conglomerate

4. First 100 km depth of the earth from the surface is
   [ ] asthenosphere
   [ ] lithosphere
   [ ] hydrosphere
   [ ] cryosphere

5. Bend that develops in stratified rocks because of plastic nature of rocks is
   [ ] Joint
   [ ] Fault
   [ ] Bedding plane
   [ ] Fold

6. Soil refers to the maximum stress that can be applied tangentially on a plane within the mass of soil before the occurrence of sliding on that plane.
   [ ] Soil strength
   [ ] mass strength
   [ ] Shear strength
   [ ] plane strength

7. It is believed that collision and welding of Indian plates with Asian plates was on---------- million years ago.
   [ ] 45
   [ ] 55
   [ ] 65
   [ ] 75

8. The study of subsurface water is
   [ ] Hydrogeology
   [ ] Geomorphology
   [ ] Geohydrology
   [ ] Aquiferology

9. Property of metamorphic rock characterized by parallel alignment of the platy or elongated mineral grains is called
[ ] Folding
[ ] Foliation
[ ] Schistosity
[ ] Bending

10. Saltation is a processes of
[ ] salt addition
[ ] sedimentation
[ ] salt desolation
[ ] saltuation

11. Geophones are used in ----------survey in investigation for subsurface geology.
[ ] radiomatric
[ ] gravity
[ ] magnetic
[ ] seismic

12. The elevation at which a stream ends by entering a large standing body of water, such as a lake or ocean
[ ] Basevell
[ ] Level base
[ ] Low level
[ ] Base level

13. Berms are used in high length slopes to protect from direct impact of water and ---------- fragments.
[ ] falling rocks
[ ] falling sediments
[ ] Falling trees
[ ] all of above

14. --------- has transversely divided the whole Himalaya Range into five major groups
[ ] Govindam
[ ] Gonser
[ ] Gansser
[ ] Gangster

15. The thrust that separates Tibetan zone and Higher Himalayan zone is called
[ ] MCT
[ ] STDS
[ ] MBT
[ ] MFT

16. Cracks in rocks along which there has been no appreciable displacement is known as
[ ] Slide
[ ] Joints
[ ] Shore
[ ] Glide

17. The principle "In a sequence of undisturbed layered rocks, the oldest rocks are on the bottom" is known as
[ ] Principle of superposition
[ ] Principle of superimpose
[ ] Principle of superstation
[ ] Principle of superior

18. The level to which water will rise in a confined aquifer
[ ] Pressure surface
[ ] Pressure level
[ ] Pressure table
[ ] Water level

19. Generally geological logging of diversion tunnel is carried out
[ ] on 1: 10000 scale
[ ] on 1: 1000 scale
[ ] on 1: 100 scale
[ ] on 1: 1 scale

20. A measure of the variation in the range of grain sizes in a rock or sediment
[ ] Scouting
[ ] Screening
[ ] Sorting
[ ] Shorting

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SECTION "B"

[20 Q. × 0.5 = 10 marks]

Mark "T" for true and "F" for false.

1. A dolomite is metamorphic rock. [ ]
2. liquefaction is a sudden gain of strength in water-unsaturated sediment. [ ]
3. A rift valley is formed on a convergent plate boundary. [ ]
4. Artificial aggregate materials are the air-cooled blast-furnace slag or fused loess. [ ]
5. Gravel is unconsolidated, fragments of rocks greater than 25.6 mm in diameter. [ ]
6. Carbon is minor but geologically important mineral. [ ]
7. Fault is displaced regular crack that develops in rocks because of tectonic force. [ ]
8. Granite is a metamorphic rock. [ ]
9. Cleavage is an intensity of reflection of light form the mineral surface. [ ]
10. Most common procedure of investigation is drill holes and sampling. [ ]
11. Recharge area of a confined aquifer is the area where water comes out from the aquifer. [ ]
12. Resistivity is measured in ohms meter squared per meter of the depth ($\Omega m^2/m$) which amounts to ohm times meter, or ohm-meter. [ ]
13. Richter scale is amount of energy received 1000 km from epicenter. [ ]
14. Ripple marks are formed on deep water deposition. [ ]
15. Sedimentary rock has occupied about 85% by volume of upper crust. [ ]
16. Sounding means investigation by penetration resistance without drilling holes. [ ]
17. The Churiya (Sub-Himalaya) zone mainly consists of huge pile of metamorphic rocks. [ ]
18. The term "groundwater table" is used for bottom of saturated zone. [ ]
19. The total metamorphic rock thickness of the higher Himalayan is around 10 km. [ ]
20. Vernes 1978 classification is known for earthquakes. [ ]

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SECTION "C"

[3Q. × 7 = 21 marks]

Answer *ANY THREE* questions.

1. What is an engineering geology? why it is so important for Environmental Engineers. Express your logical opinions.

2. What are plates? Please describe its significance in evolution of the continents.

3. If you had one 100 km long highway construction project then how would you explore construction materials? Explain your steps and methods.

4. Why does engineer importantly consider geological applications in environmental projects? Express your ideas with a case studies.

SECTION "D"

5. Write note on (*ANY FOUR*) [4 Q. × 4 = 16]
   a. Lesser Himalayan geology
   b. Types of subsurface investigation
   c. Groundwater contamination
   d. Seismic waves
   e. Landslide classification

6. Differentiate between (*ANY FOUR*) [4 Q. × 3 = 12]
   a. MBT and MCT
   b. Folds and Faults
   c. Construction materials for Tunnel and Road
   d. Igneous rock and Metamorphic rock
   e. Creep and slump

7. Give precise meaning or definition (*ANY THREE*) [3 Q. × 2 = 6]
   a. Angle of repose
   b. Sounding
   c. Rock tests
   d. Drilling mud