KATHMANDU UNIVERSITY
End of Semester Examination
February/March, 2018

Marks Scored:

Level : B. Tech.
Year : III

Course : ENVE 207
Semester: I

Exam Roll No.:

Time: 30 mins.

F. M. : 20

Registration No.:

Date : MAR 16 2018

SECTION "A"
[20 Q. × 0.5 = 10 marks]

Mark "√" in the appropriate box.

1. A naturally occurring, solid crystalline substance, generally inorganic, with a specific chemical composition.
[ ] Mineral [ ] Rock [ ] Dust [ ] Sand

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

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

4. Energy is input from the Sun; energy is lost from the interior. The magnitude of these fluxes is _____.
[ ] equal [ ] greater [ ] lesser [ ] not equal

5. In a sequence of undisturbed layered rocks, the oldest rocks are on the bottom.
[ ] Principle of superposition [ ] Principle of superstation
[ ] Principle of superimpose [ ] Principle of superior

6. To change from one form to another
[ ] Saltation [ ] Metamorphism
[ ] Sublimation [ ] Dissertations

7. _____ are geologic structures caused by deformation.
[ ] Volcanoes [ ] Folds and faults
[ ] Earhquake [ ] Landslide

8. The slow downhill movement of a relatively thin layer of soil and other debris, typically at rates of about 1 to 10 mm/year.
[ ] Creep [ ] slide [ ] Avalanche [ ] fall

9. Cracks in rocks along which there has been no appreciable displacement.
[ ] Slide [ ] Shore [ ] Joints [ ] Glide

10. The Himalayan range consists of the sediments of the _____ Sea and the Indian Shield, which was faulted and folded into the elevated young peaks.
[ ] Indian [ ] Black [ ] Arabian [ ] Tethys

11. _____ (compressional), travels with 6–8 km/s, parallel to direction of movement (slinky), Similar to sound waves.
[ ] P waves [ ] L waves [ ] S waves [ ] G waves

12. A weak, ductile layer of the mantle beneath the lithosphere; deforms to accommodate the motions of the overlying plates
[ ] Asthenosphere [ ] Mantle
[ ] Ultrasphere [ ] Crust

13. The study of the deformation of rocks and its effects.
[ ] Stratigraphy [ ] Petrology [ ] Structural geology [ ] Lithology

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

15. _____ is the northern continuation of the plain in Nepal and its elevation rages from 70m to 200 m above the sea level.
[ ] Lesser Himalaya [ ] Higher Himalaya
[ ] Sub Himalaya [ ] Terai

16. Big earthquakes maybe displace the ground several meters in a few seconds, but only about every _____.
[ ] 1000 Years [ ] 500 Years [ ] 100 Years [ ] 1500 Years

17. Sediment (typically sand) transported by intermittent jumps - a transitional state between bedload and suspended load.
[ ] Sedimentation [ ] Saltation [ ] Suspension [ ] Traction

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

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

20. Refers to unconsolidated, generally rounded fragments of rocks and minerals greater than 2mm in diameter.
[ ] Agglomerate [ ] Gravel [ ] Sand [ ] Conglomerate

SECTION "B"
[20 Q.× 0.5 = 10 marks]

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

1. Laminar flow exists in surface water flows. [ ]
2. A major difference between geologists and most other scientists is their concept of time. [ ]
3. Competent rocks are that deform only under weak stresses. [ ]
4. Creep is a fast slide of unconsolidated material that travels as a unit. [ ]
5. Drainage Basin is an area of land that funnels all water that fall on it into a network of streams. [ ]
6. Elastic deformation is expressed in rocks between earthquakes. [ ]
7. Fossils are recognized in rocks as old as 5. 5 billion years. [ ]
8. GPS indicates some parts of the Himalaya presently rising at 10 m/year. [ ]
9. Human life span 60-100 years on compared to age of the Earth 7.5 billion years. [ ]
10. Richter scale: amount of energy received 10 km from epicenter. [ ]
11. Rock is a naturally-occurring unconsolidated mixture of minerals or mineral-like substances. [ ]
12. Rock mechanics is mainly concerned with the behavior of rock mass and is utilized in exploring geochemical aspects. [ ]
13. Rocks formed by the solidification of magma are called igneous rocks. [ ]
14. Rotational slides move along a surface of rupture that is curved and convex. [ ]
15. Site investigations are now considered as a fundamental requirement of planning & design of engineering structures pertaining to different projects. [ ]
16. Strike is a compass direction of a rock layer as it intersects with a vertical surface. [ ]
17. The Earth is not maintaining a constant diameter. [ ]
18. The effective stress of soil is a measure of the soil to withstand shear stress. [ ]
19. The Himalaya covers total 3400 km length with 150 to 450 km of breadth. [ ]
20. Wave velocities on unsaturated strata lie in between 3500 to 55000 ft/sec. [ ]

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SECTION "C"

[3 Q. × 7 = 21 marks]

Answer any *THREE* questions

1. Define landslide. What is the significance of study landslide in context of development projects?

2. Describe suitable methods for sub-surface exploration of dam for hydropower project. Which is the best method in your opinion?

3. "Environmental engineers always consider geology of the project area." What are the reasons behind this statement?

4. How many major geological units are in Nepal from the south to the north? Please describe on each units shortly.

SECTION "D"

5. Write note on (any *FOUR*) [4 Q. × 4 = 16 marks]
   a. Interior structure of Earth
   b. Plate tectonics theory
   c. Selection of construction materials
   d. Engineering geology on highway
   e. Major rock types of Nepal

6. Differentiate between (any *FOUR*) [4 Q. × 3 = 12 marks]
   a. MFT and rock MBT
   b. Mud flow and Debris flow
   c. Resistivity survey and Seismic survey
   d. Granite and Marble
   e. P wave and S wave

7. Short Notes (any *THREE*) [3 Q. × 2 = 6 marks]
   a. MCT
   b. Shale
   c. Liquefaction
   d. Rift valley