KATHMANDU UNIVERSITY
End Semester Examination
March/April 2017

Marks Scored:

Level : B.Tech.
Year : III

Course : ENVE 207
Semester: I

Exam. Roll No.:

Time : 30 mins.

F. M. : 20

Registration No.:

Date : APR 6 2017

SECTION "A"
[20 Q. × 0.5 = 10 marks]

Mark "√" in the appropriate box.

1. The dip is the -------- angle of inclination.
[ ] minimum [ ] vertical [ ] horizontal [ ] maximum

2. Deep Mantle is mantle just beneath the ----------.
[ ] asthenosphere [ ] lithosphere [ ] inner core [ ] outer core

3. Displacement plane that develops in stratified rocks because of tectonic force especially compression is known as
[ ] Joint [ ] Reversed Fault [ ] Oblique Fault [ ] Normal Fault

4. Limestone and marble have --------- as a main mineral.
[ ] mica [ ] calcite [ ] quartz [ ] feldspar

5. ---------- are the clear breaks in the physical continuity of the rock body.
[ ] Schistosities [ ] Discontinuities [ ] Foliations [ ] Foldings

6. The point or location in Earth where earthquake energy in first released.
[ ] Focus [ ] Epicenter [ ] Center [ ] Metacentre

7. The resistance, which a mineral offers to an external deformation action such as scratching, abrasion, rubbing or indentation is called
[ ] Hardness [ ] Compactness [ ] Toughness [ ] Solidness

8. Making -------- is for high length slopes to protect from direct impact of water and falling rock fragments.
[ ] berms [ ] humps [ ] lumps [ ] sumps

9. Gansser (1964) has transversely divided the whole Himalaya range into -------- major groups
[ ] six [ ] four [ ] seven [ ] five

10. Rocks formed by the transformation of previously-existing rocks in the solid state due to increased temperature and pressure are
[ ] Igneous Rocks [ ] Sedimentary Rocks
[ ] Metamorphic Rocks [ ] Tectonite Rocks

11. -------- means investigation by penetration resistance without drilling holes.
[ ] Pounding [ ] Rounding [ ] Sounding [ ] Bounding

12. Mixture of Bentonite that used for stabilized the bore holes is also known as.
[ ] Rock fluid [ ] Geo fluid [ ] Drilling fluid [ ] Tecto fluid

13. Accidents in quarries mostly are due to falls of the ---------- or slides of the rock slopes.
[ ] Burdenover [ ] Overburden [ ] Beddingover [ ] Overbedding

14. Thermal conditions of oil formation depends on time and relatively narrow temperature ranges:
[ ] ≈ 50-200 °C [ ] ≈ 50-300 °C [ ] ≈ 50-400 °C [ ] ≈ 50-500 °C

15. Lesser Himalaya zone lies in between MBT in the south and ---------- in the north.
[ ] STDS [ ] CCT [ ] MCT [ ] MFT

16. Angle of Repose is the ---------- angle at which a pile of unconsolidated particles can rest.
[ ] maximum [ ] zero [ ] average [ ] minimum

17. ---------- level is the elevation at which a stream ends by entering a large standing body of water, such as a lake or ocean.
[ ] Maximum [ ] Zero [ ] Base [ ] Minimum

18. ---------- energy was released as the Earth pulled into an increasingly dense mass during its first tens of millions of years.
[ ] Kinetic [ ] Potential [ ] Gravitational [ ] Tectonic

19. Size of Earth diameter is
[ ] 10540 km [ ] 12740 km [ ] 14540 km [ ] 16540 km

20. Main Central Thrust (MCT) movement was started in ----------ago.
[ ] 35 MY [ ] 45 MY [ ] 25 MY [ ] 15 MY

SECTION "B"

[20 Q. × 0.5 = 10 marks]

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

1. Artificial aggregate materials are the air-cooled blast-furnace slag or fused loess. [ ]

2. A major difference between geologists and most other scientists is their concept of time. [ ]

3. The BOQ is evolved on the basis of geological data/details and reasonably accurate cost estimate is accordingly framed. [ ]

4. Soil mechanics deals with the study and prediction of the mechanical behavior of rock. [ ]

5. Plastic or Ductile deformation is a temporary change in shape or size that is recovered when the stress is removed. [ ]

6. Tremendous numbers of large and small asteroids, meteorites, and comets hit the recent Earth, with their energy of motion converted to heat on impact. [ ]

7. Capacity is a measure of the maximum size of sediment in a stream can transport under a given set of flow conditions. [ ]

8. Subsequent analysis shows that the changes in the rocks reflect unchanges in the Earth's magnetic field over time. [ ]

9. Most of the Great Himalayan peaks of Nepal such as Mt. Everest, Manaslu, Annapurna, and Dhaulagiri, belong to the Lesser Himalayan Zone. [ ]

10. The mantle convection may have overturned asthenosphere 8–9 times. [ ]

11. Lesser Himalaya is also known as Siwalik in India, Chure in Nepal. [ ]

12. When moisture increases soil expands horizontal to the slope. [ ]

13. The maximum speed plate motion is 1 km/year [ ]

14. Human life span 60-100 years on compared to age of the Earth 4.5 billion years. [ ]

15. Slump is a slow slide of unconsolidated material that travels as a unit. [ ]

16. Rock Avalanche is the rapid (10's to 100's km/hr) mass movement of broken rock material, often riding on a cushion of trapped air. Commonly triggered by an earthquake. [ ]

17. In the beginning of the Earth, There were abundant, short-lived radioactive elements, such as aluminum-62. [ ]

18. liquefaction is a sudden loss of strength in water-saturated sediment. [ ]

19. Small temperature variation may cause expansion and occasional fissuring of concrete. [ ]

20. Coarse aggregate means gravel or pebbles, that are retained on a screen with ¼ inch hole. [ ]

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SECTION "C"

[3Q. × 7 = 21 marks]

Answer *ANY THREE* questions

1. Describe the suitable methods for sub-surface exploration for dam in Siwalik area. Which is the best method in your opinion?

2. If you had one highway project for 50 km on middle mountain area in far-western Nepal then how would you explore construction materials? Explain your steps and methods.

3. Give three reasons why the disposal of nuclear waste can cause problems.

4. Slope stability is a major concern for environmental engineers during road construction, describe and explain the type of failures and it's impacts.

SECTION "D"

5. Write note on (*ANY FOUR*) [4 Q.×4=16 marks]
   a. Plate tectonics theory
   b. Sources of construction materials for high dam construction
   c. Application of Engineering geology on hydropower
   d. Major rock types of Nepal
   e. Landslide hazards mitigation

6. Differentiate between (*ANY FOUR*) [4 Q.×3=12 marks]
   a. Braided river and Meandering river
   b. Resistivity survey and Seismic survey
   c. Sedimentary rock and Metamorphic rock
   d. Debris avalanche and Debris slide
   e. MFT and MCT

7. Give precise meaning or explanation (*ANY THREE*) [3 Q.×2=6 marks]
   a. Angle of repose
   b. Minerals
   c. STDS
   d. Hand Auger