

KATHMANDU UNIVERSITY
End Semester examination
May/June, 2022

Marks Scored:

Level : B.E.

Year : II

Exam Roll No :

Time: 30 mins

Registration No:

Course : CIEG 209

Semester : II

F.M : 10

Date :

SECTION "A"

[20Q. × 0.5 = 10 marks]

Encircle the most appropriate option.

- The portion of the earth's surface which deals with living creature is called _____.
a. cryosphere b. lithosphere c. biosphere d. asthenosphere
- Inner Core is made up of _____.
a. NIFE b. SIAL c. Iron & Gold d. SIMA
- The construction material used to construct the railway ballast is _____.
a. Granite b. conglomerate c. pumice stone d. limestone
- Which of the following lists is arranged in order from the highest to the lowest grade of metamorphic rock?
a. Gneiss, slate, schist, phyllite b. Gneiss, schist, phyllite, slate
c. Slate, phyllite, schist, gneiss d. Slate, gneiss, phyllite, schist
- _____ are formed either by water waves or by winds piling up the sediment into long ridges.
a. Sole marks b. Ripple marks c. Flute casts d. Cross-bedding
- P-wave travels at about _____ the velocity of S-wave.
a. 2.2 times b. 1.3 times c. 1.5 times d. 2.0 times
- Building stones should have Specific Gravity in the range between _____.
a. 3.2-3.0 b. 2.8-3.2 c. 2.5-2.8 d. 2.0-2.5
- Synclinal fold _____ when tunnel is passed through it.
a. increases the pressure b. squeezes the arch
c. collapses the arch d. decreases the pressure
- _____ occurs if joints, bedding and/or foliation plane daylight parallel ($\pm 20^\circ$) to slope.
a. Plane failure b. No failure c. Wedge failure d. Toppling failure
- _____ separates Siwaliks and Lesser Himalaya.
a. STD b. MCT c. MBT d. HFT
- Darcy's Law states the rate of fluid flow through any porous medium is _____.
a. inversely proportional to the differences in hydraulic head and directly proportional to the length of the column
b. directly proportional to the differences in hydraulic head and the length of the column
c. directly proportional to the differences in hydraulic head and inversely proportional to the length of the column
d. inversely proportional to the differences in hydraulic head and the length of the column

12. Indirect subsurface investigation defined as the method _____.
- a. related to exploratory excavation
 - b. related with direct contact with subsurface through different geophysical surveys
 - c. related with digging ditches, pits, trench, etc.
 - d. related without direct contact with subsurface

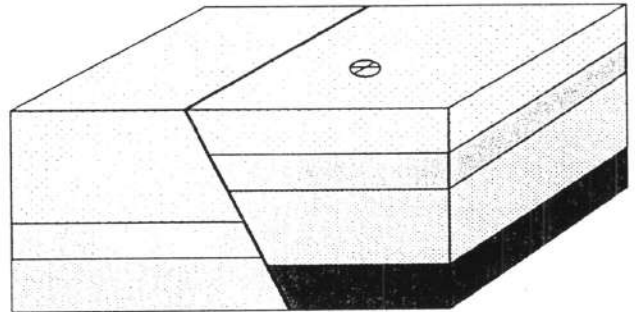
13. Northern part of the Indo – Gangetic basin made up of _____.
- a. metamorphic rock
 - b. igneous rock
 - c. sedimentary rock
 - d. fossiliferous sedimentary rock

14. The beds with gentle upstream dip ($10-30^\circ$) indicates _____ for dams and reservoirs site selection.
- a. not bad
 - b. unstable
 - c. ideal
 - d. unfavorable

15. Which of the following statements is **FALSE**?
- a. mudflows are most common in semi-arid regions
 - b. mudflows contain large amounts of water
 - c. mudflows tend to move slower than debris flows
 - d. mudflows can carry large boulders

16. The magnitude of the earthquake indicates the amount of _____.
- a. energy released
 - b. vibrations per second
 - c. vibrations per minute
 - d. oscillations

17. What type of fault is shown in the following diagram?
- a. Strike-slip fault
 - b. Reverse fault
 - c. Thrust fault
 - d. Normal fault



18. The full form of IAEG is _____.
- a. International Association of Environmental Geology
 - b. Internal Assembly of Engineering Geology
 - c. International Association of Engineering Geology
 - d. Integrated Association of Engineering Geology

19. Geotechnical report refers to _____.
- a. mineralogical survey
 - b. geotechnical investigation of soils and rocks
 - c. geological mapping
 - d. crystallographic study

20. Brunton compass is used to _____.
- a. prepare contour maps
 - b. measure the attitude of rocks
 - c. measure the distance between two objects
 - d. measure the thickness of the rock bed

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Level : B.E.
Year : II
Time : 2 hrs. 30 mins.

Course : CIEG 209
Semester : II
F. M. : 40

SECTION "B"
[5Q. × 5 = 25 marks]

Attempt *ANY FIVE* questions.

1. Describe the selection criteria of quarry sites. Discuss the status of mining of sands in Nepal with suitable examples.
2. Explain the geological conditions for site investigation of irrigation canal with suitable diagrams in detail.
3. Describe the classification of mass movements. Elucidate the mitigative measures of landslides with reference to Lesser Himalayan rock types.
4. Describe the selection criteria for bridge construction with reference to geological/engineering geological aspect with suitable diagram.
5. Define true dip and apparent dip. Determine the relation between true dip and apparent dip.
6. Boreholes were driven at P, Q, and R which are at the same attitude above mean sea level and lie at the corners of an equilateral triangle which are having sides of 6000 ft length. R is west of Q and P north of the mid-point between Q and R. The boreholes encountered the coal seam at a depth of 600 ft in borehole A, 400 ft in B, and 200 ft in C. Draw the plan of the country and determine the attitude of coal seam.

SECTION "C"
[15 marks]

7. Differentiate between (*ANY TWO*): [2Q. × 4 = 8]
 - a. Normal fault and reverse fault
 - b. Igneous rock and Sedimentary rock
 - c. Parallel bedding and Cross bedding
8. Write short notes on (*ANY TWO*): [2Q. × 3.5 = 7]
 - a. Darcy's law
 - b. Engineering Geology
 - c. Seismic waves

