

25 JUN 2023

KATHMANDU UNIVERSITY
End Semester Examination
June/July, 2023

Marks Scored:

Level : B.Sc.

Year : III

Exam Roll No. :

Time: 30 mins.

Course : ESEE 307

Semester : II

F. M. : 20

Registration No.:

Date :

SECTION "A"
[20 Q. × 0.5 = 10 marks]

Mark [X] in the most appropriate option

1. The percentage of world ocean water is
 76.5 % 86.5 % 96.5 % 66.5 %
2. Which cycle is the central focus of hydrology?
 energy cycle hydrologic cycle runoff cycle material cycle
3. The size of water droplets of drizzle will be
 More than 5 mm less than 5 mm
 more than 0.5 mm less than 0.5 mm
4. A point rainfall graph refers to
 rainfall data humidity data
 rainfall intensity data discharge data
5. The average residence time of water vapor in the atmosphere is about
 8 days 10 days 12 days 14 days
6. A line joining equal rainfall is called
 isotherm isohyet isobar isoline
7. How far a rain gauge should be from a tall object ?
 twice the height of the object thrice the height of the object
 equal height of the object 1.5 times the height of the object
8. Which instrument is used to measure the water level of a river?
 current meter rain gauge staff gauge anemometer
9. A hyetograph is a plot of
 rainfall intensity against time stream discharge against time
 cumulative rainfall against time cumulative rainfall against time
10. According to the WMO, an ideal network density of rain gauge in mountainous regions of temperate and tropical zones is one station for
 100-250 km² 10-100 km² 500-1000 km² 1000-2000 km²

11. Seeping off of precipitation from the ground and reaching to the ground water table is called
 discharge infiltration percolation evaporation
12. The diameter of the Class A Evaporation pan will be
 1012 mm 1210 mm 1210 cm 1000 mm
13. Density of glacier ice ranges from
 800 – 1000 kg/m³ 100 – 200 kg/m³
 830 – 917 kg/m³ 50 – 70 kg/m³
14. If we need a knife to penetrate into a snowpack then the snowpack is called
 hard soft very hard medium
15. A plot between accumulated rainfall vs time in chronological order is called
 hydrograph mass curve hyetograph isohyet
16. Sediment transported to the channel by means of splash, sheet, rill and gully erosion is called
 bed load wash load bed material load sediment load
17. The top of the saturated zone of groundwater is called
 water table water tank water bed water layer
18. Snow pillow is used to measure
 depth and water equivalent depth
 water equivalent weight
19. Detention reservoir is used to control
 flood discharge evaporation infiltration
20. A stream that remains dry in a dry period is called
 intermittent stream perennial stream
 continuous stream ephemeral stream

SECTION "B"

[10 Q. × 1 = 10 marks]

Define in one sentence.

21. Hydrograph
22. Current meter
23. Unit hydrograph

24. Interflow
25. Equilibrium line of a glacier
26. Evaporimeter
27. Firn
28. Lysimeter
29. Glacial lake
30. Ephemeral stream

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Level : B.Sc.
Year : III
Time : 2 hrs. 30 mins.

Course : ESEE 307
Semester : II
F. M. : 55

SECTION "C"
(Long Answer Questions)
[4 Q. × 7 = 28 Marks]

Attempt *ANY FOUR* questions.

1. Define infiltration. Explain the infiltration capacity and factors which affect infiltration.
2. Explain with equations the stream flow measurement by area-velocity and salt dilution methods.
3. Describe the different components of runoff of a stream. Classify the streams based on their characteristics.
4. Every year Nepal is affected by floods. What may be the main causes of it and what would you suggest to reduce human and financial losses due to flood in Nepal?
5. Write in detail the importance of the study of snow, glacier and glacial lakes in Nepal in the context of climate change.

SECTION "D"
(Short Answer Questions)

6. Differentiate between any *THREE*. [3 Q. × 4 = 12]
 - a. Direct runoff hydrograph and effective runoff hydrograph
 - b. Confined and unconfined aquifers
 - c. Wash load and bed load
 - d. Firn and ice
7. Write short notes on any *THREE*. [3 Q. × 3 = 9]
 - a. Potential evapotranspiration
 - b. Unit hydrograph
 - c. Types of the glaciers found in Nepal
 - d. Baseflow
8. Give reasons why [2 Q. × 3 = 6]
 - a. current meter is not good to use for the velocity measurement of a turbulent stream.
 - b. an automatic water level sensor is better than a staff gauge.