KATHMANDU UNIVERSITY
End Semester Examination
July/August, 2024

Marks Scored:

Level : B.E.
Year : III

Course : GEOM 303
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date : 07 AUG

SECTION "A"

[20 Q. × 0.5 = 10 marks]

Choose and encircle in the most appropriate option from each set of choices

1. Setting out is done
   a. prior to the preparation of plans
   b. along with the preparation of plans
   c. after the preparation of plans
   d. if obstructions are present

2. Invert is defined as
   a. the R.L. of the inverted pipeline
   b. the R.L. of the top of the sewer
   c. the R.L. of the bottom of the inner surface of sewer or pipe
   d. the R.L. determined with staff inverted

3. What is the volume of a 6 m deep tank having rectangular shaped top 6 m x 4m and bottom 4 m x 2 m (computed through the use of prismoidal formula?
   a. 96 cubic metre b. 94 cubic metre c. 92 cubic metre d. 90 cubic metre

4. The radius of a simple circular curve is 30 m and the length of the specified chord is 30 m. The degree of the curve is
   a. 57.29 b. 60 c. 55.60 d. 37.03

5. For setting out a simple curve using two theodolites
   a. offsets from tangents are required
   b. offsets from chords produced are required
   c. deflection angles from Rankine's formula are required
   d. Full chord distance is required

6. The length of boning rod for a section of the sewer is
   a. kept constant
   b. Changed frequently
   c. Changed at the alternate intermediate sections
   d. changed at every section

7. Simpson's rule for calculating area is applicable only when the ordinates are
   a. odd
   b. Even
   c. Composite
   d. Applicable in any cases

8. The distance between intersecting point and mid – point of simple circular point is
   a. Apex distance b. Ordinate distance c. Chainage d. Tangent length

9. Gyro- theodolite gives
   a. Magnetic bearing b. True bearing c. Arbitrary bearing d. Grid bearing

10. The unit of sounding is
a. m/s b. Cycle/s c. Fathom d. Kg/s

Fill in the blanks with appropriate answer.

11. Spring tides occurs during _____

12. Elevation of outer edge of road is raised above the inner one is called _____

13. _____ (instrument) is used for measuring the area of irregular boundary.

14. The minimum distance between two vehicles moving along a curve when the driver of one vehicle can just see the other vehicle on the road is _____

15. Principle of tacheometric survey is based on _____

16. The connection between the channel and the penstock is _____

17. On the basis of installed capacity, capacity greater than _____ MW is large hydropower.

18. Offsets from the tangents to the curve are proportional to the _____ of their distances from the first tangent point.

19. According to the assumption of vertical curve, the length of the vertical curve is _____ to the length of the long chord.

20. Generally, tacheometer's telescope is provided with _____ lens.

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F. M. : 40

SECTION "B"
[40 marks]

Attempt ALL questions. Assume the suitable value if necessary.

1. Clarify the concept of Engineering and construction survey reflecting the importance of geomatics engineer on route surveying. [3]

2. Explain the term 'sounding' in hydrographic survey with equipment required for it. [3]

3. Suppose you are working in a hydropower; elaborate the stepwise task you need to complete as a geomatics engineer. [4]

4. List out the methods to set out a simple circular curve. The center-line of two straights is projected forward to meet at I, the deflection angle being 30°. If the straights are to be connected by a circular curve of radius 200 m, tabulate all the setting-out data, assuming 20-m chords on a through chainage basis, the chainage of I being 2259.59 m. [2+5]

5. List out the assumptions on a vertical curve. A 3% rising gradient meets a 2% down gradient. A vertical curve 200 m long is to be used. The pegs are to be fixed at 20 m interval. Calculate the elevation of the curve points by tangent corrections and calculate the staff readings required, given that the height of collimation is 350.0, R.L. of the apex is 350.0 m and its chainage is 1000.00 m. [2+6]

6. Describe the procedure to be followed for setting out the culvert with well labeled figure. [5]

7. How can we compute tacheometric constant for any tacheometer. List out the points to be considered while carrying out tacheometric survey. [3+2]

8. compute the area of the given figure using [2.5+2.5]
   a. coordinate method and
   b. trapezoidal rule