

**2022**

**GEOGRAPHY — HONOURS**

**Paper : CC-4**

**(Thematic Mapping and Surveying)**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Category - A**

Answer **any five** questions (each within **50** words).

1. (a) Convert into scientific notation : Depth of Mariana Trench : **11034 metres.**  
 (b) Convert into standard notation — without power of 10 :  **$31415926.53589793238 \times 10^{-7}$**   
 (c) Round of the following number to nearest thousand : **49962**  
 (d) Round of the following number to 4 significant digits : **0.045067** ½×4
  
2. (a) When is the 'characteristic' of logarithm of any number positive and when is it negative?  
 (b) Which of the following is/are false?  
 (i)  $2^{\log_2 8} = 8$   
 (ii)  $\log_5 \frac{1}{5} = 1$   
 (iii)  $\log_5 (7 + 2) = \log_5 7 + \log_5 2$  1+1
  
3. What is the smallest graduated division in levelling staff? What is the difference in level between X and Y if BS at X is 2.670 metres and FS at Y is 1.770 metres and there is no change point? 1+1
  
4. What diagrams are used to represent the following ? ½×4  
 (a) Age and Sex Composition of Population  
 (b) Economic Composition of Population  
 (c) Mean Monthly Annual Temperature  
 (d) Number of Households in Different Blocks of a District.
  
5. What is WML? 2
  
6. What is the function of a slow motion screw? 2

**Please Turn Over**

7. How are the following represented on a weather map?

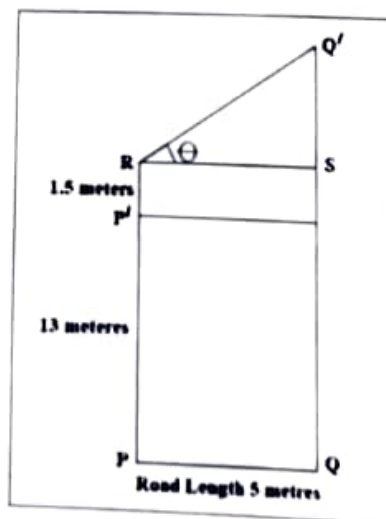
- (a) Thunderstorm.  
(b) Wind speeds of 50 knots.

1+1

### Category - B

Answer **any four** questions (each within **150** words).

8. What is closing error? How is it corrected graphically? 2+3
9. What is the function of a prism in a prismatic compass? How can the errors due to local attraction be minimised? 2+3
10. How do geological maps help in analyzing the topography of a given region in relation to its structure? 5
11. Two students are on the opposite sides of a tall tower. The measures of angles of elevation of the top of the tower are  $30^\circ$  and  $45^\circ$ . If the height of the tower is 20 metres, find the distance between the boys. 5
12. What do you mean by inversion of relief? How will you identify it on a geological map? 2+3
13. How would you find the height of a point whose base is accessible and inaccessible by theodolite? 5
14. (a) Two buildings PP' and QQ' of different heights are located across a road. The height of the building PP' is 13 metres. The Abney level is held on the summit of PP' at a height of 1.5 metres from the top of this building. The angle ( $\theta$ ) from the instrument on top of P to the top of the building QQ' is determined using an Abney Level to be  $42^\circ$ . Road length between the two buildings is 5 metres. Determine the height of the second building QQ'.



- (b) What is the least count of the vernier in an Abney Level? What is the maximum minutes marked on the vernier scale? 3+2

**Category - C**

Answer **any two** questions (each within **500** words).

- 15.** The following are the bearings of lines of a closed traverse. The survey was undertaken in a clockwise direction.

Line	Fore Bearing
MN	N 50°30' E
NO	S 40°15' E
OP	S 38°30' W
PM	N 30°45' W

- (a) Represent the Fore Bearing values as Whole Circle Bearings.  
 (b) Calculate the included angles of the traverse.  
 (c) Undertake checking to verify if sum of interior angles is correct. 4+4+2
- 16.** How are qualitative and quantitative data employed to construct a socio-economic map? Explain your answer with suitable examples. 10
- 17.** Discuss the different parts of a Theodolite and explain the utility of each part. 10
- 18.** What is meant by pressure gradient? Comment on the isobaric patterns most likely to be found on a weather map representative of S-W monsoon season in India. Use diagrams to illustrate your answer. 2+8
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