KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.) 2025 & Previous Admissions
I Semester Final Examination – February 2026

SWC 1101 **Surveying and Levelling (1+2)** **Marks: 50**
Time: 2 hours

I **Fill in the blanks** **(10x1=10)**

1. The U-fork and plumb bob are required for ……..
2. At the equator, the dip of the needle in a compass is …….°
3. The BM established by the survey of India is known as ……
4. The horizontal angle between the true meridian and the magnetic meridian is called as ……..
5. The lines joining places having the same value of dip or inclination is called ……

State True or False

6. The volume computed by the prismoidal method is considered to be average.
7. A contour line intersects a ridge line obliquely.
8. In a prismatic compass, the zero is marked on the South end.
9. The size of the theodolite is defined according to the diameter of the graduated horizontal circle.
10. A total station is a surveying instrument combining an EDM with an electronic theodolite to measure slope distances and vertical / horizontal angles.

II **Write short notes on ANY FIVE of the following** **(5x2=10)**

1. What is local attraction?
2. What is the need of the scale drawn in the map?
3. What is orientation in Plane Table Surveying?
4. What is check levelling?
5. State trapezoidal rule. What are the considerations of this rule?
6. What is tacheometry?
7. How does one differentiate a depression and peak using contour lines?

III **Answer ANY FIVE of the following** **(5x4=20)**

1. Differentiate rise and fall system and collimation system of estimating reduced levels.
2. Explain the procedure of setting up plane table over a station.
3. The distance between two stations was 1210 m when measured with a 20 m chain. The same distance when measured with 30 m chain was found to be 1195 m. If the 20 m chain was 0.05 m too long, what the error in the 30 m chain?
4. The following offsets were taken at 15m intervals from a survey line to an irregular boundary line: 3.50, 4.30, 6.75, 5.25, 7.50, 8.80, 7.90, 6.40, 4.40 and 3.25 m
   Compute the area between the chain line, the irregular boundary line and the end offsets by
   (a) mid ordinate rule and
   (b) average ordinate rule
5. Explain the stadia method of tacheometry.
6. Explain the characteristics of contours.
7. Write short notes on Hand level.

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1. The following consecutive readings were taken with a level and a 4m levelling staff on a continuously sloping ground at common intervals of 30m: 0.855 (on A), 1.545m, 2.335, 3.115, 3.825, 0.455, 1.380, 2.055, 2.855, 3.455, 0.585, 1.015. 1.850, 2.755, 3.845 (on B). The RL of A was 380.550. Make entries in a level book and apply the usual checks. Determine the gradient of AB. Use Rise and Fall method
2. Explain with diagram the various accessories used in Plane Table Surveying.

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