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B.E./B.Tech(Full Time) DEGREE END SEMESTER EXAMINATIONS, November/December 2012

AGRICULTURE & IRRIGATION ENGINEERING

THIRD SEMESTER – (REGULATIONS 2008)

AI 9201 – SURVEYING

Time: 3 hrs Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. What is Reciprocal Ranging?
2. A line was measured by a 30 cm chain; which was 0.2 m too long, and was found to be 12 chains. Find the correct length.
3. The magnetic bearing of a line was found to be N60°30' W in 1956 when the declination was 5°10'E. Find its present magnetic bearing if declination is 3°W.
4. What is orientation? List the methods of orientation.
5. A line of levels was run from a bench mark No.1 of R.L. 235.450m to a bench mark No.2 of R.L. 242.700m. The sum of the back sights was 15.355 and that of the fore sights was 8.115. Determine the closing error.
6. What is the importance of contour maps in Agricultural Engineering Works?
7. What are the different conditions which should be satisfied when a theodolite is in permanent adjustments?
8. List various Modern equipments used in surveying.
9. What do you understand by setting out?
10. How would you conduct reconnaissance of a route survey?

Part – B (5 x 16 = 80 Marks)

11. (i) A 30 m tape actually measures 29.985 m when it is supported at the two ends only, with the temperature at 30°C and tension of 70 N. The tape weighs 12 N and has a cross-sectional area of 0.04cm^2. If the field temperature is also 30°C, what tension should be applied so that the tape measures exactly 30 m when supported at the two ends? (10 marks)

(ii) If a tape when standardized at 20°Cmeasures100.004 m, at what temperature will it be exactly equal to its nominal value of 100.000m? α = 11.2X 10^{-6} per °C. (6 marks)

12. (a) Given below are the bearings of the lines of a closed traverse. Adjust the bearings for local attraction

Line	FB	BB
AB	68°	247°
BC	55°	231°
CD	120°	304°
DE	180°	360°
EF	263°	87°
FG	311°	127°
GH	244°	66°
HA	301°	120°

(16 marks)

(OR)

12. (b) What is Three point Problem? Explain (i) Trial and Error Method

(ii) Mechanical Method (16 marks)

13.(a)(i) Define Contour and Contour Interval. List the characteristics of Contour. (6 marks)

(ii) Explain various methods of contouring (10 marks)

(OR)

13. (b)(i) Determine the area of the closed traverse ABCDE by DMD method

Line	Departure (m)	Latitude(m)
AB	220	120
BC	230	-250
CD	-100	-250
DE	-290	100
EA	-60	280

(8 marks)

(ii) To find the excavation required for a highway cutting, cross sections are taken at every 30 m. The cross sections are plotted and their areas obtained by planimeter are under. Calculate the volume of excavation by prismoidal rule.

Chainage	0	30	60	90	120	150	180	210	240	270	300
Area (m^2)	26	194	240	98	180	290	360	300	85	150	50

(8 marks)

14. (a) Calculate the heights and distances of the following cases

(i) Base of the object accessible

(ii) Base of the object inaccessible (16 marks)

(OR)

14. (b) The measured lengths and bearings of the sides of a closed traverse are tabulated below: Work out the missing quantities

Line	Length	Bearings
AB	-	33°45'
BC	300	86°23'
CD	-	169°23'
DE	450	243°54'
EA	268	317°30'

(16 marks)

15. (a) Write Brief Notes on (i) Setting Out Work (ii) Route Survey (16 marks)

(OR)

15. (b) Two Tangents intersect at the chainage 1190 m, the deflection angle being 36°. Calculate all the data necessary for setting out a curve with a radius of 300 m by deflection angle method. The peg interval is 30 m. (16 marks)