



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Technology (Agriculture)

First Year, Second Semester Examination – 2016

AG 1208: Surveying and Land Development

Instructions for Candidates:

There are three parts (I, II, III).

Answer all questions.

Answer for Part I and Part II on the paper itself.

Part I and Part II will be collected after **one (01) hour**.

All questions do not carry equal marks.

Index No:

No. of pages : 07

No. of questions : 07

Time : **Three (03) hours**

Part I

Question 01:

Select the most appropriate answer and underline it on this paper.

- (i) What is the **correct** statement regarding chain surveying?
- a) It can be employed in a large area of land.
 - b) It is applicable to the areas where many details are available.
 - c) Taking measurements and preparation of the plan is done simultaneously in the field.
 - d) Consists of measuring length of the lines marked out in the field.
- (ii) What do you mean by the “Plus measurements” in the chain surveying?
- a) The lines run to locate details to avoid long offsets.
 - b) Measurements of the buildings taken along its walls.
 - c) Oblique offsets taken along the line of the wall of a building.
 - d) Lateral distances measured from the survey lines.
- (iii) What is/are the correct statement/s regarding instruments used in plane table surveying?
- 1. One of the sight vanes of alidade is provided with a narrow slit and is used as object vane.
 - 2. Point of the upper arm and plumb line are in the same vertical line in plumbing fork.
 - 3. Leveling of plane table is done by placing the level tube on the board in two positions at right angles to each other.
- a) Statements 1 and 2 are correct.
 - b) Statements 2 and 3 are correct.
 - c) Statements 1 and 3 are correct
 - d) All the statements are correct.

- (iv) What is the instrument used to oriented the plane table in field?
- Using a through compass
 - Using an alidade
 - Using a plumbing fork
 - Using a level tube
- (v) Find the correct order of the aiming and focusing of a dumpy level or Auto level in levelling
- Rotate the horizontal fine adjustment knob to align staff in the center of view.
 - Aim at the staff by looking along the rough finder on the top of the level.
 - Rotate the focusing knob until view of the staff is clear.
 - Rotate eyepiece of the telescope (to focus the cross hair in the telescope) while looking through the eyepiece.
- P, Q, R, S
 - R, S, P, Q
 - Q, R, S, P
 - S, Q, R, P
- (vi) What is the suggested contour interval for topographic maps?
- Larger than 50 m
 - Larger than 25 m
 - 0.5 m to 5m
 - Smaller than 0.2 m
- (vii) What is the contour interval of a map if the elevation difference of 3rd contour line to 6th contour line is 12 m?
- 3 m
 - 4 m
 - 6 m
 - 12 m
- (viii) Select the **correct** statement regarding on riparian areas.
- Those are the areas of lands that are either temporarily or permanently covered with shallow water
 - They have a high ecological productivity and should not be drained or filled
 - Those are the areas of lands adjacent to rivers, streams and other water sources
 - Riparian areas play a crucial role in nutrient recycling
- (ix) Which is **not** a process coming under the land **cleaning**, in land development?
- Underbrushing
 - Land grading
 - Felling
 - Stacking

- (x) A distribution control structure is,
- a) Turnout
 - b) Drop Structures
 - b) Flume
 - d) Culvert
- (xi) Water running downhill cuts a channel deep into the soil is called as
- a) Gully erosion
 - c) Sheet erosion
 - b) Rill erosion
 - c) Raindrop erosion

Question number (xii) and (xiii) are based on the universal soil loss equation given below.

$$A = KR(LS)CP$$

- (xii) The factor denoted by “K” is,
- a) Crop management Factor
 - b) Length/Slope Factor
 - c) Rainfall factor
 - d) Soil erodibility factor
- (xiii) The factor represent by “LS”,
- a) Vary according to the impact of raindrops on the soil surface.
 - b) Vary according to the farming practices.
 - c) Vary according to the size and shape of different fields.
 - d) Vary according to the tillage practices.
- (xiv) Select the agronomic soil conservation method from the list given below.
- a) Bench terracing
 - c) Contour strip cropping
 - b) Contour bunding
 - d) Contour trenching
- (xv) Transforming relatively steep lands into a series of level or nearly level strips, or steeps running across the slope is called,
- a) Channel terrace
 - b) Bench terracing
 - c) Narrow based terrace
 - d) Broad based ridge terrace
- (xvi) Conservation tillage includes,
- a) Direct drill
 - c) No-till
 - b) Trash farming
 - d) All above

(Total 16 marks)

PART - II

Question 02:

- (i) What do you mean by a contour line? (03 marks)

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- (ii) Write down three (03) characteristics of contour lines. (03 marks)

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- (iii) State six (06) factors considered in preparation of a farm layout. (06 marks)

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(Total 12 marks)

Question 03:

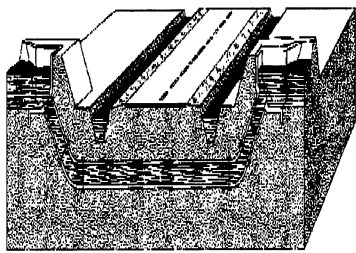
- (i) Define the term land development. (03 marks)

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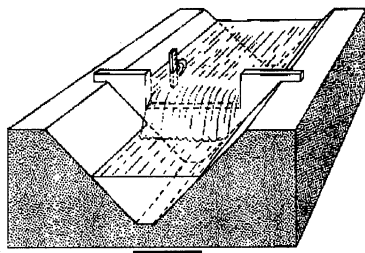
- (ii) Differentiate earthen canals and lined canals. (04 marks)

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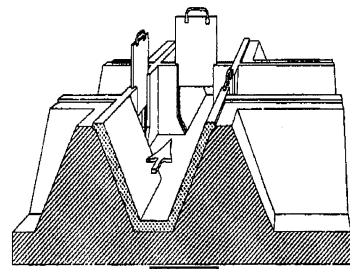
(iii) Identify and name the water management structures given below. (05 marks)



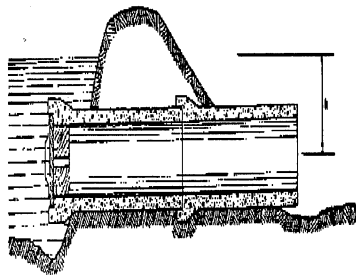
A



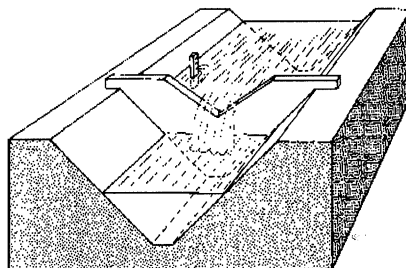
B



C



D



E

- A -
- B -
- C -
- D -
- E -

(Total 12 marks)

PART III

Question 04:

- (i) Differentiate perpendicular offsets and oblique offsets. (04 marks)
- (ii) When a surveyor is carrying out a chain survey, surveying was obstructed because of a pond. As chain line goes through the pond, explain how to overcome the problem and measure the distance, by using a suitable method and diagrams. (05 marks)
- (iii) Briefly explain the method of carrying out a plane table survey by using **radiation method**, with suitable illustrations. (06 marks)

(Total 15 marks)

Question 05:

- (i) What do you mean by the term “Bench mark”? (03 marks)
- (ii) The following staff readings were taken from a level book of a road survey.
 - (a) Find the reduced levels by using height of instrument method. (Elevation of the bench mark is 150m.) (06 marks)
 - (b) Check the accuracy of the readings. (06 marks)

Station	BS	IS	FS	HI	RL	Remarks
A	2.4			.....	150	BM
B		2.0			.....
C		1.8			.....
D	2.8		1.4	.....	.....	TP1
E		2.4			.....
F	1.3		2.6	.....	.....	TP2
G		2.3			.....
H	0.6		3.0	.....	.....	TP3
I			2.1		.....

(Total 15 marks)

Question 06:

- (i) Define the term “Soil Erodibility”. (02 marks)
- (ii) Briefly describe the phases of soil erosion. (06 marks)
- (iii) What are the preventive measures which can be taken to reduce the soil erosion? (07 marks)

(Total 15 marks)

Question 07:

- (i) Define the term “soil conservation” (03 marks)
- (ii) Briefly describe the objectives of mechanical soil conservation measures. (06 marks)
- (iii) Discuss how afforestation supports in reduction of soil erosion. (06 marks)

(Total 15 marks)