



The Open University of Sri Lanka
 Faculty of Engineering Technology
 Bachelor of Industrial Studies Honors (Agriculture) Programme
 Final Examination - 2017
AEX5243/AEI5243/AEX5230 - Farm Power and Machinery

Date : 07-11-2017
 Time : 9:30-12:30 hours
 Duration : 03 hours

SECTION-II: 2hours

Answer any four (04) of the questions.

1.
 - a. Briefly describe (3 marks each)
 - i. External combustion engine
 - ii. Internal combustion engine
 - b. Explain the following terms using diagrams (3 marks each)
 - i. Compression ratio
 - ii. Engine displacement
 - iii. Engine capacity
 - c. Discuss the difference between (5 marks each)
 - i. Two stroke and four stroke internal combustion engines
 - ii. Spark Ignition engines and Compression Ignition engines
2. Write short notes on the following (5 marks each).
 - a. Ignition system
 - b. Disc harrow
 - c. Direct and indirect sun driers
 - d. Traction and Ballasting
 - e. Machinery cost management
3.
 - a. List down the steps followed in calibrating a sprayer. (5 marks).
 - b. Suppose a knapsack sprayer nozzle delivers 0.25 gal/minute.
 - i. If the walking speed of a farmer is 200 ft/minute and the spray width is 2.5 feet, calculate the area that could be covered per minute (consider 1acre = 43560 sqft). (5 marks)
 - ii. Calculate the gallons of spray applied per acre. (5 marks)
 - iii. If the capacity of the sprayer is 10 litres, calculate the number of tanks needed for one hectare of land. (5 marks)
 - iv. If the recommended chemical application is 12 oz glyphosate per acre what is the amount of the chemical that should be added per each tank? (5 marks)
4. Write notes on the following in relation to agricultural production (5 marks each).
 - a. Animal power
 - b. Wind power
 - c. Solar energy
 - d. Tidal power

5.
 - a. What do you mean by farm mechanization? Give your answer with examples related to Sri Lankan agriculture (10 marks).
 - b. Explain how mechanization can help to improve the land productivity? (8 marks).
 - c. What are the constraints for mechanization in Sri Lanka? (7 marks).

6. You have been asked to keep the university premises clean without biodegradable debris piling here and there within the premises. How would you utilize these types of waste in producing energy while keeping the premises clean? Your answer should also include the constraints and the advantages of the proposed method.