5.

(a) Calibration of a sprayer is crucial for efficient application of agrochemicals at the correct dosage. Critically discuss (***15 marks***).

(b) Suppose a Knapsack sprayer has three nozzles with 1.5 feet spraying width and a half foot overlapping and each nozzle delivers 0.25 gal/minute at 25 psi pressure.

i. If the walking speed of a farmer is 250 ft/min, calculate the area that could be covered per minute. (Consider 1ac = 43560 sqft). (***2 marks***)

ii. What is the time needed to spray one acre? (***3 marks***)

iii. Calculate the gallons of agrochemical applied per acre. (***3 marks***)

iv. If the recommended chemical application is 10 oz Roundup per acre what is the amount of chemical needed per gallon of water? (***2 marks***)

6.

a) Briefly discuss the special features of an Agricultural Tractor. (Your discussion should relate to pre-harvest and post-harvest operations) (***15 marks***).

b) Briefly discuss following two systems of an engine (***5 marks each***)

i. Lubrication system

ii. Cooling system

Study Programme	: Bachelor of Industrial Studies Honours in Agriculture
Name of the Examination	: Final Examination
Course Code and Title	**: AGI5543/AEX5243/AEI5243/AEX5230 Farm Power and Machinery**
Academic Year	: 2019/20
Date	: 11th October 2020
Time	: 0930-1230hrs
Duration	: **3 hours**

SECTION II: Answer **any four (04)** of the questions. You may spend **2 hours**

1. Compare the following (***5 marks each***)

   a) Internal combustion and external combustion engines
   b) Air cooling and water-cooling systems of an engine
   c) Spark ignition and compression ignition
   d) Primary tillage and Secondary tillage
   e) Disc plough and disk harrow

2.
   a) What do you understand by farm mechanization? (***7 marks***)
   b) Describe how farm mechanization could improve the land productivity (***10 marks***).
   c) What are the constraints for mechanization in Sri Lanka? (***8 marks***)

3. Write short notes on the following (***5 marks each***).

   (a) Precision agriculture.
   (b) Importance of keeping records of farm machinery.
   (c) Direct and indirect sun driers.
   (d) Solar hybrid drier.
   (e) Ballasting.

4. Write notes on the following in relation to agricultural production. You should indicate the advantages and disadvantages of each method (***5 marks each***).
   (a) Animal power
   (b) Wind power
   (c) Solar power
   (d) Hydropower
   (e) Biomass energy