



UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER

PROGRAMME; BSc. BSC AGRICULTURAL AND BIOSYSTEMS ENGINEERING 1

COURSE CODE: ABE101

TITLE OF PAPER: AGRICULTURAL ENGINEERING PRINCIPLES

TIME ALLOWED: TWO (2) HOURS

SPECIAL MATERIAL REQUIRED: NONE

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY TWO OTHER QUESTIONS

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CHIEF INVIGILATOR

QUESTION ONE: COMPALSORY QUESTION

- a) Distinguish between controls and signals/instruments as components that help us operate farm machinery. (10 marks)
- b) Discuss the four components of the waste management hierarchy and their importance in a sustainable waste management system. (12 marks)
- c) Name five components of an irrigation system (10 marks)
- d) Name eight indicators of a warming world (8 marks)

QUESTION TWO

- a) Figure 1 shows the dashboard of instruments on a tractor
- Name the indicator marked I (3 marks)
 - How would you react if indicator I continues lighting while the tractor engine is running? (5 marks)

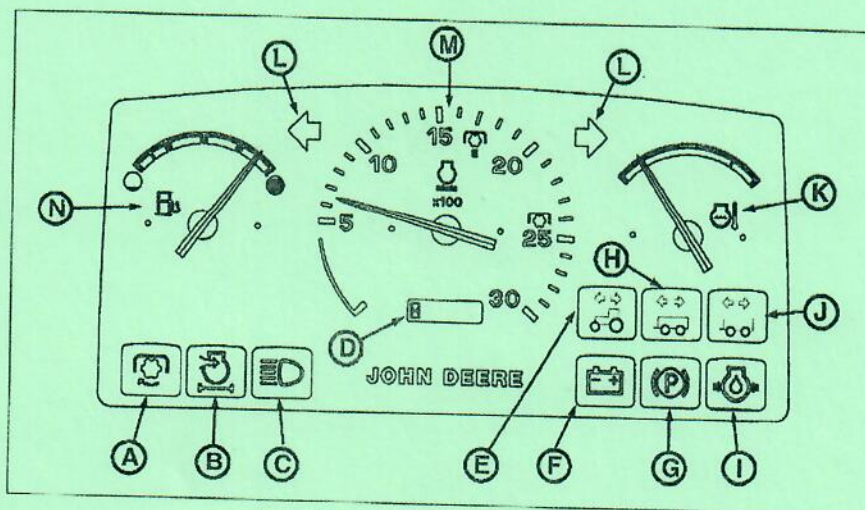
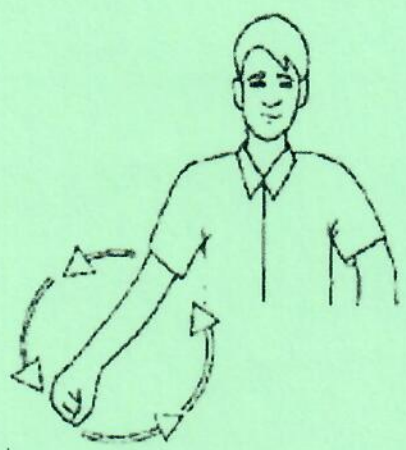


Figure 1 Dashboard instruments of a tractor.

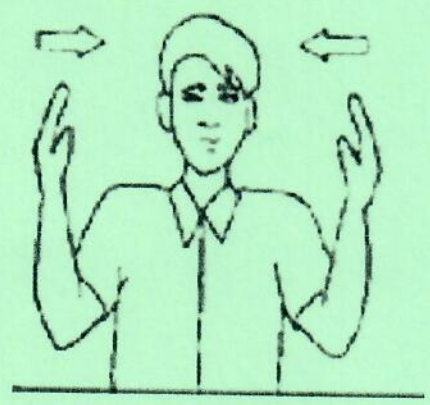
- b) Briefly discuss five things you need to do before starting any pump(10 marks)
- c) State three probable types of hazards that may occur in an agricultural workshop, giving one example of each type of hazard (6 marks).
- d) Briefly discuss three likely effects of climate change in relation to agriculture (6 marks)

QUESTION THREE

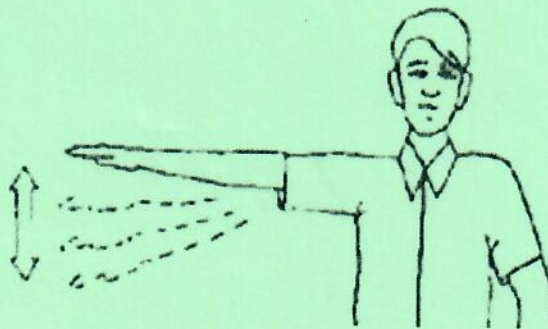
- a) What is the meaning of the three hand signals in Figure 2 (A, B, C) that are used when operating agricultural machinery? (9 marks)



A



B



C

Figure 2: Hand signals used for operation of farm machinery

- b) Write the four principles used as a guide to develop a waste management system. (8 marks)
- c) Explain the phrase 'fire triangle' in determining the conditions necessary for a fire to start. (9 marks)
- d) List two human activities that contribute to global warming, that eventually leads to climate change. (4 marks)

QUESTION FOUR

- a) List any four criteria that are used to name common agricultural implements/equipment. (8 marks)
- b) Describe two features of a sanitary landfill designed to prevent ground water pollution. (10 marks)
- c) List the three most likely fire classes that are likely to occur in an agricultural workshop? (6 marks)
- d) Briefly explain the choice of material/chemical you would use to extinguish the fires in the classes stated in (c) above. (6 marks)