



# ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

## AGRICULTURAL ENGINEERING

6048/1

PAPER 1 Multiple Choice

SPECIMEN PAPER

1 hour

Additional materials:

Multiple Choice answer sheet,

Soft clean eraser,

Soft pencil (type B or HB is recommended),

Electronic calculator.

**TIME** 1 hour

### INSTRUCTIONS TO CANDIDATES

**Do not open this booklet until you are told to do so.**

Write your name, Centre number and candidate number on the answer sheet in the spaces provided unless this has already been done for you.

There are **forty** questions in this paper. Answer **all** questions. For each question there are four possible answers, **A, B, C** and **D**. Choose the **one** you consider correct and record your choice in **soft pencil** on the separate answer sheet.

**Read very carefully the instructions on the answer sheet.**

### INFORMATION FOR CANDIDATES

Each correct answer will score one mark.

Any rough working should be done in this booklet.

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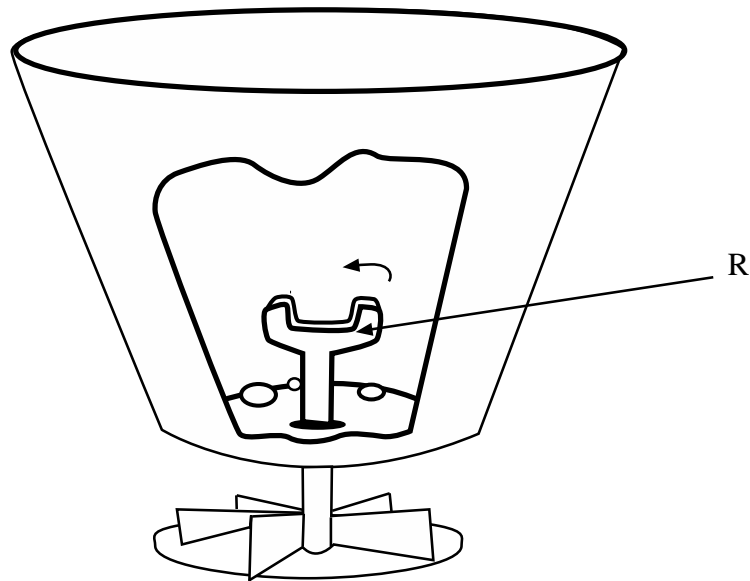
**This question paper consists of 10 printed pages and 2 blank pages.**

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- 1 The force that enables a tractor to slow down and eventually stop is
- A equilibrium.
  - B friction.
  - C moment.
  - D centre of gravity.
- 2 The energy that enables a tractor to move down a slope with its engine off is called
- A potential.
  - B kinetic.
  - C electrical.
  - D frictional.
- 3 Calculate the amount of work done to move an implement through a distance of **500m**, if the total force of resistance is **200N**.
- A 100 kj
  - B 2.5 kj
  - C 0.4 kj
  - D 100 000 kj
- 4 Which of the following is a computer programme most suitable for irrigation?
- A CLIMWAT
  - B CROPWAT
  - C SPSS
  - D GPS
- 5 Blue smoke and carbon deposition in lubrication systems are an indicator of
- A an old engine.
  - B high speed.
  - C insufficient lubricant.
  - D worn out oil rings.
- 6 What is the meaning of the oil designation, “**SAE 10W/40**”?
- A A performance of a good lubricant for specific operating conditions.
  - B Oil can be used regardless of the climate or temperature.
  - C Lubricating efficiency enhanced by adding sulphur and phosphorus.
  - D Oil used in old engines or in badly worn out engines.
- 7 Viscosity of lubricants is mainly affected by
- A air
  - B force
  - C pressure
  - D temperature

- 8 A feature which is applied when the tractor wheels are stuck in mud is called the
- A final drive.
  - B differential lock.
  - C clutch.
  - D driving gear.
- 9 What is the effect of sliding the hitch assembly to the right on a mouldboard plough?
- A causes deeper plough penetration.
  - B causes shallow plough penetration.
  - C causes a wider width of cut.
  - D causes a narrow width of cut.
- 10 On a disc plough the following are the functions of the rear wheel **except**
- A increasing speed.
  - B controlling depth.
  - C producing straight furrows.
  - D preventing lateral movement of the plough.
- 11 Which implement is used to break the hard plough pan?
- A Chisel plough
  - B Lister
  - C Subsoiler
  - D Roller
- 12 The initial intensive operations done on land using heavy machinery is known as
- A secondary tillage.
  - B conservation tillage.
  - C conventional tillage.
  - D primary tillage.

The diagram below shows an oscillating fertilizer spreader. Use the diagram to answer question **13** and **14**.

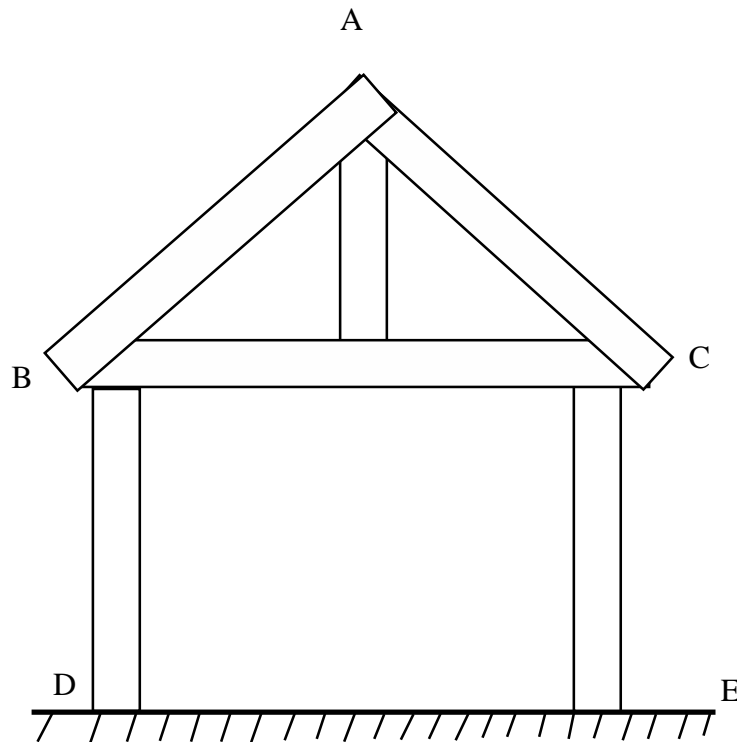


- 13** What is part R?
- A Hopper
  - B Spout
  - C Agitator
  - D Collar
- 14** What is the purpose of part R in a planter?
- A adjust speed of seed placement.
  - B prevents seed from piling above metering mechanism.
  - C throw seed out into the furrow.
  - D space out seed in the row.
- 15** The inrow spacing of a crop is calculated using the following **except**
- A wheel circumference.
  - B sprocket ratios.
  - C number of cells in plates.
  - D plate thickness.
- 16** How does a faulty press wheel of a planter affect the planter performance?
- A Shallow seed placement.
  - B Poor seed coverage.
  - C Malfunction of flicker mechanism.
  - D Malfunction of spacing mechanism.

- 17 A long pipe containing two or more nozzles of a sprayer is called
- A boom.
  - B knapsack.
  - C mist blower.
  - D ultra low volume (ULV).
- 18 What is the function of a strainer in a knapsack sprayer?
- A pressure regulation.
  - B trapping dirt.
  - C forcing liquid out.
  - D atomisation.
- 19 Which part of the sprayer is used for atomisation of liquid particles?
- A Pump.
  - B Nozzle.
  - C Agitator.
  - D Strainer.
- 20 How is the sprayer application rate affected by forward tractor speed?
- A Inversely proportional to forward speed.
  - B Directly proportional to forward speed.
  - C Independent of forward speed.
  - D Halved when forward speed is halved.
- 21 Which part of the groundnut digger removes the soil from the nuts?
- A Cutter
  - B Sheller.
  - C Shaker
  - D Inverter
- 22 The following are functions of a groundnut digger **except**
- A cutting the tap root.
  - B loosening the soil.
  - C plucking the pods.
  - D lifting.
- 23 The threshing effectiveness of a combine harvester can be determined by the percentage of
- A clean grain in clean grain auger.
  - B non-grain material that passes through the walkers.
  - C unthreshed heads in tailings auger.
  - D seed detached from non-grain parts.

- 24 The process of separating grain from the cob is called
- A dehulling
  - B shelling
  - C winnowing
  - D dehusking
- 25 Which survey method is suitable for soil conservation structures?
- A Topographic
  - B Geodetic
  - C Cadastral
  - D Descriptive

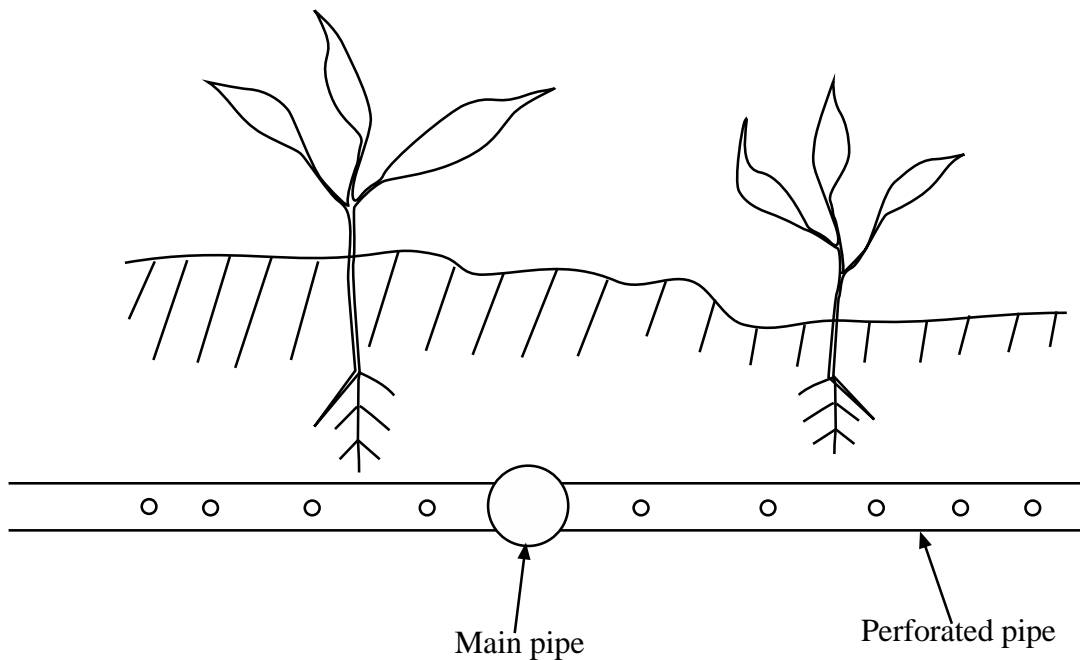
Use the diagram provided below to answer questions 26 and 27 that follow.



- 26 Which stresses will be experienced in the member BC?
- A shear
  - B tensile
  - C compressive
  - D shear and tensile

- 27** Identify the member which when removed will cause the wall of the granary to fall outwards.
- A** BC
  - B** AB
  - C** AC
  - D** DE
- 28** A precision instrument used for measuring angles in the horizontal and vertical planes during surveying is called a
- A** dumpy level.
  - B** stake.
  - C** theodolite.
  - D** grade rod.
- 29** Chutes are used in irrigation canals where
- A** there are big differences in the elevation of the canal.
  - B** there is a direct flow of water between two or more canals.
  - C** they divert part of the water from the canal to a smaller one.
  - D** they carry irrigation water across roads.
- 30** Which is the most commonly used pump in irrigation systems in Zimbabwe?
- A** Reciprocating pump.
  - B** Centrifugal pump.
  - C** Chain pump.
  - D** Hydraulic rain.

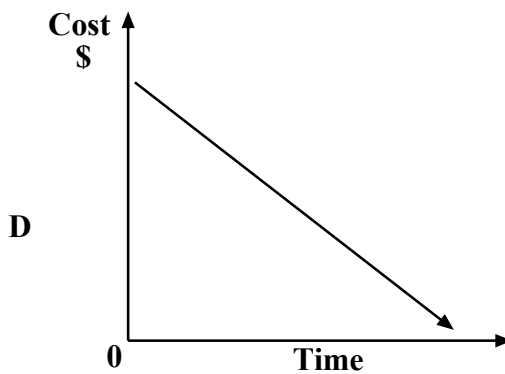
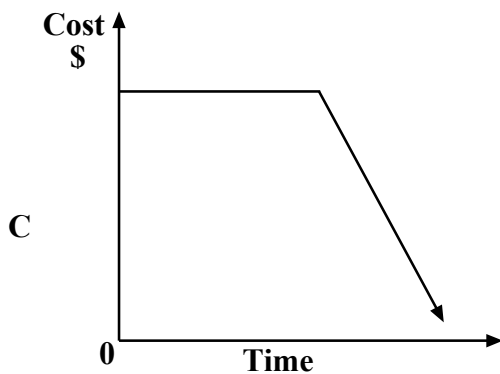
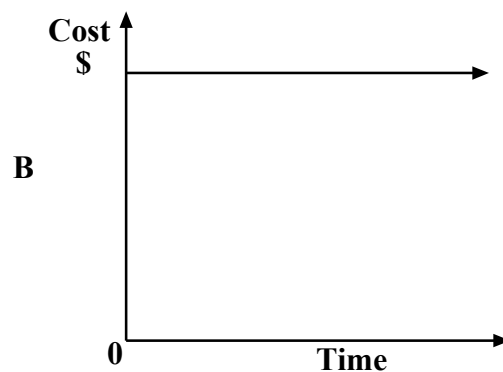
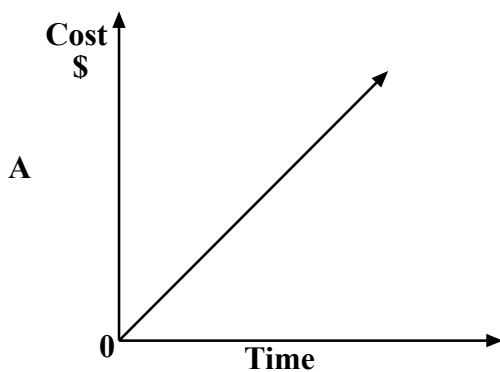
- 31 Identify the method of irrigation shown in the diagram below.



- A Surface  
 B Sub surface  
 C Furrow  
 D Sprinkler
- 32 Which irrigation method is suitable for irrigating an undulating terrain?
- A Border strip.  
 B Sprinkler.  
 C Furrow.  
 D Flood.
- 33 The following are roles of integrated water management **except**
- A ensuring the sustainability of vital ecosystems.  
 B promoting holistic and coordinated water management.  
 C maximising economic and social welfare from water resources.  
 D assigning the management of land and other natural resources to other stakeholders.
- 34 The primary use of water includes all of the following **except**
- A basic domestic human needs.  
 B animal drinking.  
 C moulding bricks.  
 D irrigation.



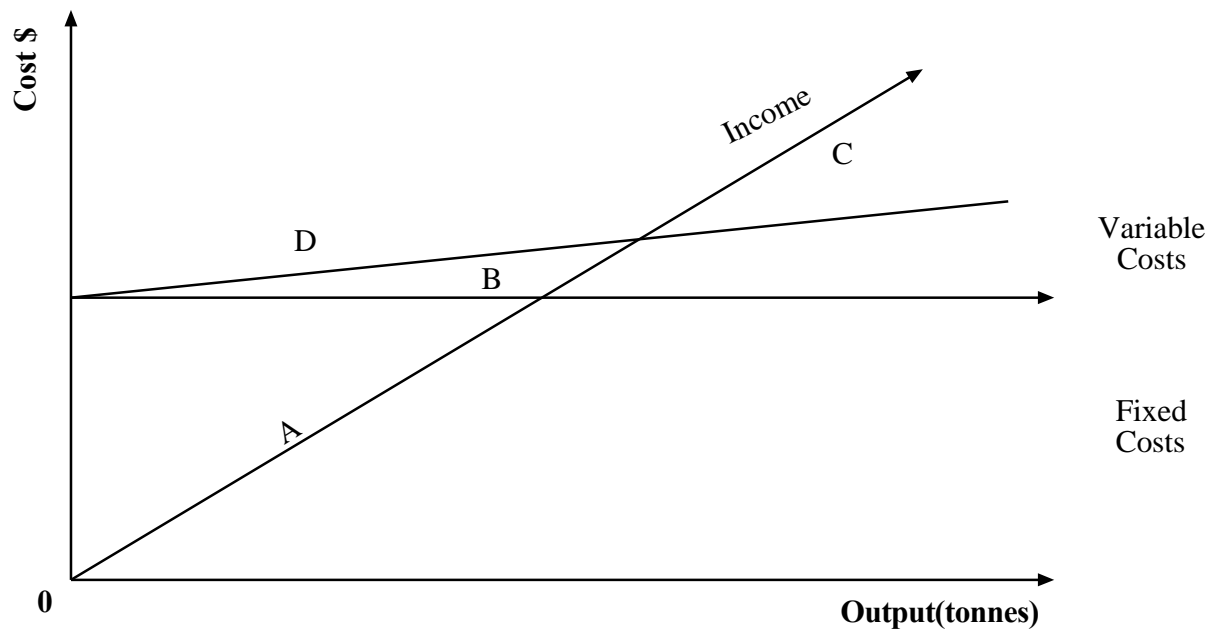
- 35 In the water Act, all water is invested in the
- A Board Chairman.
  - B Minister.
  - C President.
  - D Water Authority.
- 36 According to the water Act, land on which or along the boundary of the whole or any portion of which a public stream exists is called
- A non riparian land.
  - B riparian land.
  - C public land.
  - D prohibited land.
- 37 The operating costs of a tractor include:
- A repairs, maintenance, fuel, oil and labour.
  - B depreciation, taxes, fuel, oil, labour
  - C repairs, depreciation, fuel, oil, labour
  - D repairs, taxes, interest, oil, labour
- 38 Which graph shows the straight line method of determining machinery depreciation?



- 39** Calculate the return for every dollar invested in machinery whose total cost is **\$11 500** and gross income **\$57 500**.

**A** 6  
**B** 0.8  
**C** 1.2  
**D** 4

- 40** The graph below shows output and costs from using farm machinery. Which point represents profit?



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