

GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

FARM MECHANICS SG
(Second Paper: Theory)

OCTOBER / NOVEMBER 2005
OKTOBER / NOVEMBER 2005

TIME: 2 hours

MARKS: 125

INSTRUCTIONS:

- Make sure that your examination number is written on your Answer book.
- The paper consists of TWO sections, namely Sections A and B.
- * **Section A:** Short Questions – Answer all the questions on the **answer sheet** on the **inside cover** of the **Answer book**.
- * **Section B:** Answer all FOUR questions in your Answer book

SECTION A
MULTIPLE-CHOICE QUESTIONS

QUESTION 1
COMPULSORY

In Questions 1.1 to 1.25, various answers are given, of which only ONE is correct. Indicate the correct answer to each question by making a cross (X) over the appropriate letter next to the relevant question number on your answer sheet.

Example: 1.26

A	B	C	D
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1.1 The most positive drive occurs through _____.

- A. chain drive
- B. V-belt drive
- C. flat-belt drive
- D. hydraulic drive

(1)

1.2 The capsule of the thermostat in the cooling system of a lorry is usually filled with _____.

- A. mercury
- B. spirits
- C. wax
- D. sodium

(1)

- 1.3 The chuck, clutch lever, feed lever and feed shaft are parts of a _____.
- A. transmission system
 - B. clutch
 - C. centre lathe
 - D. pedestal drill
- (1)
- 1.4 To temper steel, it must be _____.
- A. cooled rapidly
 - B. covered with chrome
 - C. cooled slowly
 - D. annealed
- (1)
- 1.5 A centrifugal pump pumps water by means of _____.
- A. an impeller
 - B. a rotor element
 - C. a cylinder
 - D. a centre pivot
- (1)
- 1.6 The centrifugal weights are components of a _____.
- A. hay baler
 - B. centrifugal pump
 - C. distributor
 - D. differential
- (1)
- 1.7 To make steel harder one should add _____.
- A. carbon
 - B. chrome
 - C. zinc
 - D. tin
- (1)
- 1.8 The easiest welding position is _____.
- A. overhead
 - B. downhand
 - C. vertically upwards
 - D. horizontal
- (1)
- 1.9 The cause of undercutting is _____.
- A. that the welding current is too low
 - B. moving too fast
 - C. using the wrong metal
 - D. that the welding current is too high
- (1)

- 1.10 The most common cause of corrosion is _____.
- A. oxidation and electrolysis
 - B. distortion
 - C. acid treatment
 - D. exposure to moisture
- (1)
- 1.11 The quick-change gearbox, tail stock, thread dial and lead screw are parts of the _____.
- A. stocks and dies
 - B. centre lathe
 - C. transmission system
 - D. pedestal drill
- (1)
- 1.12 Varnish, oil and grease are _____.
- A. anti-corrosive agents
 - B. coolants
 - C. polishing aids
 - D. lubricants
- (1)
- 1.13 Shrinking of metal when welded is influenced by the _____.
- A. welding speed
 - B. type of electrode
 - C. age of the electrode
 - D. quantity of slag
- (1)
- 1.14 The blade of a bulldozer is operated by means of a _____.
- A. plunger pump
 - B. double-acting cylinder
 - C. lever
 - D. clutch
- (1)
- 1.15 The size of a tractor to be used for a specific job is determined by the _____.
- A. size of the land and the texture of the soil
 - B. weight of the tractor and the size of the wheels
 - C. weight of the implement and the resistance of the soil
 - D. weight of the tractor and the moisture content of the soil
- (1)
- 1.16 The water in the radiator of a water-cooled engine is cooled by _____.
- A. flowing air
 - B. evaporation
 - C. the thermostat
 - D. the water pump
- (1)

- 1.17 Latex, resorcinol and silicon are _____.
- A. adhesives
 - B. coolants
 - C. lubricants
 - D. fluxes
- (1)
- 1.18 Standardization in agriculture means that _____.
- A. the standard of farming should not be too low
 - B. all products should be marked by the same method
 - C. all farmers should maintain the same standard
 - D. all implements should fit any make of tractor
- (1)
- 1.19 The three-point linkage mechanism of a tractor has _____.
- A. no lifting arms
 - B. one lifting arm
 - C. two lifting arms
 - D. three lifting arms
- (1)
- 1.20 The sensitivity mechanism of a tractor forms part of the _____ system.
- A. fuel-supply
 - B. ignition
 - C. hydraulic
 - D. brake
- (1)
- 1.21 The power take-off shaft is part of the _____.
- A. transmission system
 - B. power-brake system
 - C. engine
 - D. differential
- (1)
- 1.22 Which one of the following metals is the most ductile, malleable and forgeable?
- A. Chrome-steel
 - B. Cast iron
 - C. Mild steel
 - D. High-carbon steel
- (1)
- 1.23 What type of rod is used for hard-surfacing?
- A. A mild steel rod
 - B. A special hard-surfacing rod
 - C. A hard tungsten rod
 - D. A cast-iron rod
- (1)

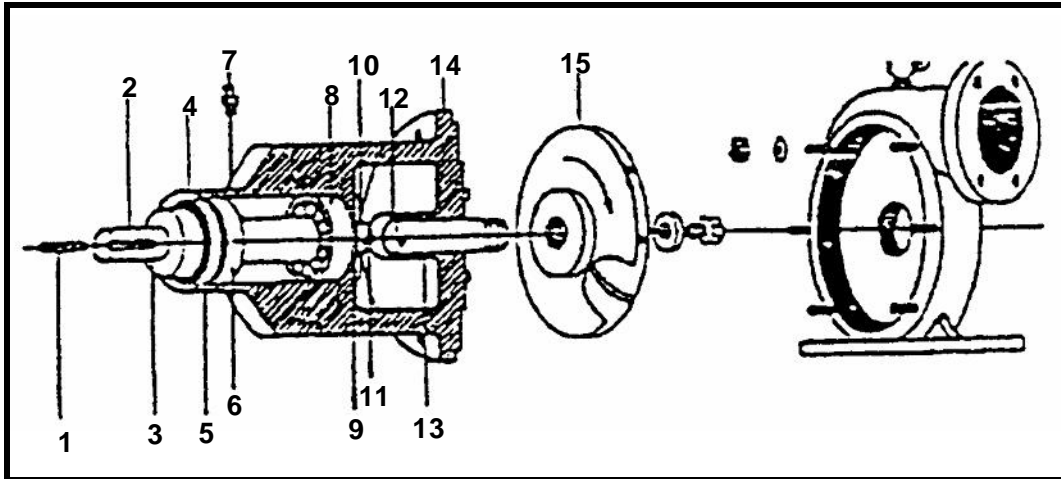
- 1.24 When copper oxidises, it turns into a _____ colour.
- A. purple
 - B. blue-green
 - C. black
 - D. red
- (1)
- 1.25 The process through which metal is covered by a thin layer of another metal is called _____.
- A. electrolysis
 - B. corrosion
 - C. oxidation
 - D. electroplating
- (1)

TOTAL FOR SECTION A: [25]

SECTION B

QUESTION 2

- 2.1 Name the following parts of the centrifugal pump. Write only the numbers 1 – 15 in your answer book and alongside each the name of the part.



(15)

- 2.2 Name EIGHT aspects which should receive careful consideration when deciding on which type of pump to use.

(8)
[23]

QUESTION 3

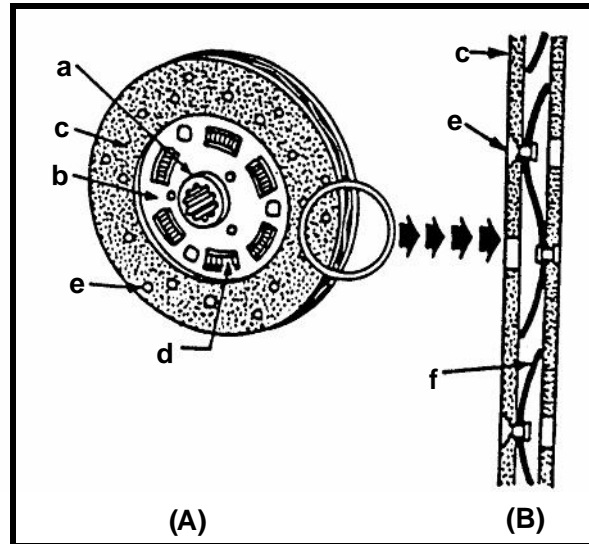
- 3.1 Name and explain the working of parts used in the baler, from the time the hay has been picked up in the windrow until the bale slides out of the baler. (10)
- 3.2 In tabular form compare the advantages of the ram-type baler and the round-type baler. (10)
- 3.3 Name SIX factors with regard to the maintenance of balers. (6)
- [26]**

QUESTION 4

- 4.1 In tabular form, compare the following aspects of stainless steel with mild steel:
- A. Durability (2)
 - B. Mouldability (2)
 - C. Weldability (2)
 - D. Being conductive of heat (2)
 - E. Being resistant to corrosion (2)
- 4.2 State FIVE reasons why you would make use of a coolant while using the centre lathe. (5)
- 4.3 Draw neat sketches of the following welding defects and give the causes of each defect:
- 4.3.1 Undercutting (3)
 - 4.3.2 Inclusion of slag (3)
- [21]**

QUESTION 5

Study the picture below and then answer the questions that follow:



FLEXIBLE CLUTCH PLATE

- 5.1 Label parts **a** to **f**. (6)
 - 5.2 Name **THREE** properties of a good clutch. (3)
 - 5.3 Name **THREE** types of clutches. Explain briefly the uses of each. (6)
 - 5.4 In which **THREE** classes are fires classified? Name the type of fire extinguisher to be used for each class of fire. (6)
 - 5.5 What precautionary steps must be taken to prevent making contact with blood when treating a learner with a bleeding wound? (2)
 - 5.6 Which **TWO** factors are important when calculating the speed of the driven pulleys? (2)
 - 5.7 Explain the function of a distributor. (5)
- [30]**

TOTAL FOR SECTION B: [100]

TOTAL: 125

END