

JASPER WILLIAMS HIGH SCHOOL
YEAR 12 ANNUAL EXAMINATION 2020
AGRICULTURAL SCIENCE
QUESTION PAPER

Time Allowed: 3 Hours
(An extra 10 minutes is allowed for reading this paper)

INSTRUCTIONS

1. Write your **Index Number** on the front page of the **Answer Booklet**.
2. Write **all** your answers in the **Answer Booklet** provided.
3. If you use extra sheets of paper, be sure to show clearly the question number(s) being answered and to tie each sheet in your **Answer Booklet** at the appropriate places. Ensure that your **Index Number** is written on the extra sheets.
4. Answer **all** the questions with a blue **or** black ballpoint pen or ink pen. Do **not** use red ink. You may use a pencil **only** for drawing.
5. You may use a calculator, provided it is silent, battery-operated and non-programmable.
6. There are **three** sections in this paper. **Sections A and B are compulsory. Note the choices in Section C.**

SUMMARY OF QUESTIONS:

Section	Guidelines	Total marks	Suggested Time
A	There are Twenty multiple-choice questions and all are compulsory.	20	36 minutes
B	There are six questions and all are compulsory	60	108 minutes
C	There are five essay-writing questions. Answer two questions only.	20	36 minutes

The multiple-choice questions in this section are all compulsory. Each question is worth 1 mark.

INSTRUCTIONS FOR MULTIPLE – CHOICE QUESTIONS

1. In your Answer Book, circle the letter which represents the best answer. If you change your mind, put a line through your first choice and circle the letter of your next choice.

For example:

8	A	B	C	D
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2. If you change your mind again and like your first answer better, put a line through your second circle and tick (✓) your first answer.

For example:

8	A	B ✓	C	D
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3. No mark will be given if you circle more than one letter for a question.

- Which of the following is a zoonotic disease?
A. Flu
B. AIDS
C. Mastitis
D. Rabies
- Pig waste can be used to produce
A. biofuel.
B. resources.
C. methane gas.
D. hydrogen gas.
- Which of the following is a symptom of food insecurity?
A. Stunting
B. Green living
C. Intelligence
D. Physical fit
-

4. The diagram given below shows a machine. Use it to answer the question below.



The prime function of the above machine is to

- A. Extract honey
- B. Propel the boat
- C. Cut grass
- D. Spray agrochemicals

5. Fertilizer is a type of

- A. overhead cost.
- B. variable cost.
- C. marginal output.
- D. total variable output

6. The tool used to obtain loan from FDB is the

- A. partial budget
- B. whole farm budget
- C. enterprise budget
- D. return to capital

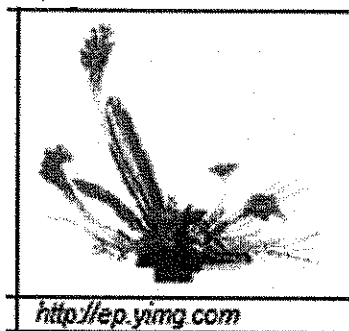
7. The study of soil organisms is known as

- A. vermiculture
- B. soil fauna
- C. soil zoology
- D. soil animals

8. Hybrid vigour is known as

- A. hybrids
- B. heterosis
- C. pure bred
- D. cross breeds

9. The process of adapting wild plants and animals for human use is called
- A. plant introduction. C. domestication.
 B. tissue culture. D. germplasm collection
10. The method of harvesting trees that causes a lot of damages to the environment is called
- A. clear cut. B. seed tree selection.
 C. group selection. C. thinning harvest
11. Tapa is the product of
- A. Paper mulberry C. pine
 B. Beach mulberry D. vesi
12. A shrub that is cultivated for their colourful leaves are called
- A. frangipani C. lantana
 B. crotons D. hibiscus
13. What is the name of grass like – flowering plant distinguished by triangular stems and inconspicuous flowers?
- A. Grass C. Sedges
 B. Rushes D. Herb
14. The type of visual balance shown in the diagram below is called



- A. symmetrical C. radial
 B. asymmetrical D. open.

15. The queen will store the sperm after mating in the
- A. Pollen basket
 - B. corbiculum
 - C. spermatheca
 - D. baby bag
16. Honey bees uses propolis to
- A. make medicines
 - B. make cosmetics
 - C. make cosmetics
 - D. reduce vibration.
17. Which type of hive is shown in the diagram below?



- A. Natural
 - B. Skep
 - C. Bee Gums
 - D. Artificial
18. The blood poisoning in calves is called
- A. pneumonia
 - B. tuberculosis
 - C. septicemia
 - D. brucellosis
19. The breed of cattle that produces the highest butter fat content in milk is
- A. Jersey
 - B. Friesian
 - C. Limousine
 - D. Hereford
20. Which of the following vitamins causes low fertility in cows?
- A. Vitamin A
 - B. Vitamin B
 - C. Vitamin C
 - D. Vitamin D

SECTION B**SHORT ANSWER QUESTIONS****(60marks)**

There are six questions in this section. All questions are compulsory.

Question 1**(10 marks)**

- Explain the term pollutant. **(1 mark)**
- Explain one mitigation method for climate change. **(2 marks)**
- State one way to achieve zero hunger by 2030. **(1 mark)**
- Identify **one** cause for the development of severity of injuries from pollution. **(1 mark)**
- Differentiate between a **whole budget** and a **partial budget** in relation to the number of farming enterprises involved. **(2 mark)**
- Below is a summary of the Green Farms Cash Flow Budget for January and February 2018.

	Jan \$	Feb \$
Opening Balance	2 000.00	
Total Income	7 000.00	14 000.00
Total Expenditure	4 000.00	5 000.00
Net Cash Flow	3 000.00	9 000.00
Closing Balance	_____	

Source: Adapted from <http://www.2.bp.blogspot.com>

Use the information above to calculate the farms opening balance for February 2018.

(3 marks)**Question 2****(10 marks)**

- Explain how farm machines are good substitutes for labour. **(2 marks)**
- Differentiate between endemic and exotic tree species. **(2 marks)**
- Explain the importance of glomalin production by soil organisms. **(2 marks)**
- Describe one husbandry method that assists the colonies of earthworms to grow. **(2 marks)**
- Differentiate between **cactus** and **succulent plants**. **(2 marks)**

Question 3

(10 marks)

- a. Differentiate between protection and production forests. (2 marks)
- b. Identify one characteristic of a good container that is used for growing plants. (1 mark)
- c. Explain the importance for repotting plants. (2 marks)
- d. Give **one difference** between terrarium and dish garden. (1 mark)
- e. Describe the **importance** of scarifying as a method of lawn maintenance. (2 marks)
- f. Illustrate how the dipping method of irrigating pot plants is different from the reservoir method. (2 marks)

Question 4

(10 marks)

- a. Explain the process of extracting organisms from a soil sample. (3 marks)
- b. Describe the process of cleaning logs. (2 marks)
- c. Explain how fruits can be harvested without damaging them. (2 marks)
- d. State one advantage of preserving fruit. (1 mark)
- e. Identify one method of transplanting sapling. (1 mark)
- f. State one treatment for the disease European Foul Brood. (1 mark)

Question 5

(10 marks)

- a. Explain the reason for standing honey overnight. (1 mark)
- b. State one **importance** of water for honey bees. (1 mark)
- c. State one solution to the challenge of bees on comb removed for extraction. (1 mark)
- d. Explain the relationship between honey bees and biodiversity. (2 marks)
- e. Differentiate between **hand mating** and **pen mating** of cattle in relation to their mating ratios. (2 marks)
- f. Explain the purpose for **curing honey**. (1 mark)
- g. Identify one reason for requeening a hive. (1 mark)
- h. State the importance of the super in a Langstroth hive. (1 mark)

Question 6

(10 marks)

- a. Describe one function of the rumen. **(1 mark)**
- b. Explain the term oestrus. **(1 mark)**
- c. Identify one calving difficulty in cows. **(1 mark)**
- d. Describe the process of moving cattle from the farm to the abattoir. **(3 marks)**
- e. State one reason for weaning calves. **(1 mark)**
- f. State the importance of viscera inspection. **(1 mark)**
- g. Explain how the fiber content of roughage is different from forage crops. **(1 mark)**
- h. Identify one use of inedible fats from beef. **(1 mark)**

SECTION C ESSAY WRITING

[20 marks]

There are five essay questions in this section. Write an essay of approximately 250-300 words to answer each question. Answer any two questions.

Please note that the allocation of marks for the content has been included for each question and 1 mark is allocated to the structure of the essay. Each question is worth 10 marks.

In this section, you are given an opportunity to show that you can:

- (i) select ideas relevant to the topic;
- (ii) Use appropriate examples; and
- (iii) Communicate information clearly and logically.

QUESTION 1

The key to animal production is a good animal husbandry program.

Using one livestock that you have studied, discuss:

- **three** challenges and one suggested solution for each challenge; (3 marks)
- **three** systems for raising cattle; and (3 marks)
- **three** characteristics of a good calf house. (3 marks)

Question 2

Fruit tree crops are an important group of trees in ornamental horticulture.

With reference to the above **discuss**

- **three** uses of trees. (3 marks)
- **three** cultural treatments to promote the survival of tree crops. (3 marks)
- **three** processes involved for producing sawn timber. (3 marks)

Question 3

Agroforestry is an important concept that improves the land use system of the country.

With reference to the above **discuss**:

- three** systems of agro – forestry. (3 marks)
- **three** advantages of agro – forestry. (3 marks)
- three** disadvantages of agro – forestry. (3 marks)

Question 4

10 marks

Apiculture is the maintenance of honey bees' colonies, commonly in hives by humans.

With reference to the following **discuss**:

- **three** breeds of honey bees and their characteristics **(3 marks)**

-**three** castes of honey bees and one characteristic of each **(3 marks)**

-**three** uses of honey **(3 marks)**

Question 5

10 marks

Biotechnology is widely accepted as a method to improve crop production

With reference to the above statement, discuss **three**

• applications of biotechnology **(3 marks)**

• advantages of GMO **(3 marks)**

• disadvantages of GMO **(3 marks)**

THE END!