

P5022 Nov.
W.A.S.S.C.E. 2000
AGRICULTURAL
SCIENCE 2
 3 hours

2

Name:.....

Identification Number:.....

THE WEST AFRICAN EXAMINATIONS COUNCIL

West African Senior School Certificate Examination

November 2000

AGRICULTURAL SCIENCE 2

3 hours

Do not open this booklet until you are told to do so. While you are waiting, read the following instructions carefully. Write your Name and Identification Number in the spaces provided at the top right-hand corner of this booklet.

This paper consists of two parts. Answer Part I in your Objective Test answer sheet and Part II in your answer booklet. Part I will last for 1 hour after which the Objective Test answer sheet will be collected. Do not start Part II until you are told to do so. Part II will last for 2 hours.

PART I
OBJECTIVE TEST
 [60 marks]

1 hour

1. Use **HB** pencil throughout.
2. If you have got a blank answer sheet, complete the top section of it as follows:
 - (a) In the space marked *Name*, write in capital letters your **surname** followed by your **other names**.
 - (b) In the spaces marked *Examination, Year, Subject and Paper*, write 'W.A.S.S.C.E.', '2000 NOVEMBER', 'AGRICULTURAL SCIENCE' and '2', respectively.
 - (c) In the box marked *Identification Number*, write down your **Identification Number** vertically in the spaces on the left-hand side. There are numbered spaces in line with each digit. Shade carefully the space with the same number as each digit.
 - (d) In the box marked *Subject Code*, write down the digits **502213** in the spaces on the left-hand side. Shade the corresponding numbered spaces in the same way as for your identification number.
 - (e) In the box marked *Sex*, shade the space marked **M** if you are male, or **F** if you are female.
3. If you have got a pre-printed answer sheet, check that the details are correctly printed, as described in 2 above. In the boxes marked *Identification Number, Subject Code and Sex*, **reshade** each of the shaded spaces.
4. An example is given below. This is for a **female** candidate, whose **name** is Chidera Nkiruka OBI, whose **Identification Number** is 5251102068, and who is offering **Agricultural Science 2**.

THE WEST AFRICAN EXAMINATIONS COUNCIL

PRINT IN BLOCK LETTERS

Name: OBI CHIDERA NKIRUKA Examination: WASSCE Year: 2000 NOV.
Surname Other Names

Subject: AGRICULTURAL SCIENCE Paper: 2

IDENTIFICATION NUMBER	
5	0-1-2-3-4-5-6-7-8-9
2	0-1-2-3-4-5-6-7-8-9
5	0-1-2-3-4-5-6-7-8-9
1	0-1-2-3-4-5-6-7-8-9
1	0-1-2-3-4-5-6-7-8-9
0	0-1-2-3-4-5-6-7-8-9
2	0-1-2-3-4-5-6-7-8-9
0	0-1-2-3-4-5-6-7-8-9
6	0-1-2-3-4-5-6-7-8-9
8	0-1-2-3-4-5-6-7-8-9

For Supervisors only.
 If candidate is absent shade this space:

SUBJECT CODE	
5	0-1-2-3-4-5-6-7-8-9
0	0-1-2-3-4-5-6-7-8-9
2	0-1-2-3-4-5-6-7-8-9
2	0-1-2-3-4-5-6-7-8-9
1	0-1-2-3-4-5-6-7-8-9
3	0-1-2-3-4-5-6-7-8-9

SEX
Indicate your sex by shading the space marked M (for Male) or F (for Female) in this box: M F
<input type="checkbox"/> <input type="checkbox"/>

INSTRUCTIONS TO CANDIDATES

1. Use grade HB pencil throughout.
2. Answer each question by choosing one letter and shading it like this: [A] [B] [C] [D]
3. Erase completely any answers you wish to change.
4. Leave extra spaces blank if the answer spaces provided are more than you need.
5. Do not make any markings across the heavy black marks at the right hand edge of your answer sheet.

Answer **all** the questions.

Each question is followed by **four** options lettered A to D. Find out the correct option for each question and shade **in pencil** on your answer sheet the answer space which bears the same letter as the option you have chosen. Give only **one** answer to each question.

An example is given below.

The farm input which will boost the productivity of a depleted soil is

- A. fertilizer.
- B. fungicide.
- C. insecticide.
- D. seed.

The correct answer is fertilizer which is lettered A and therefore answer space A would be shaded.

[B]

[C]

[D]

Think carefully before you shade the answer spaces; erase completely any answer(s) you wish to change.

Do all rough work on this question paper.

Now answer the following questions.

1. Which of the following is **not** a solution to problems of local farmers?
 - A. Rehabilitating bad roads
 - B. Subsidizing crude implements
 - C. Practising improved farming methods
 - D. Providing credit facilities by governments
2. The main motive of the farmer in commercial agriculture is to
 - A. maximize profit.
 - B. produce rare crop varieties.
 - C. produce for family consumption.
 - D. increase risk.
3. The land tenure system which leads to land fragmentation is
 - A. freehold.
 - B. inheritance.
 - C. pledging.
 - D. gift.
4. Subsistence farming is practised in West Africa on land mostly acquired through
 - A. pledge.
 - B. donation.
 - C. inheritance.
 - D. purchase.

5. The roles of government in the development of agriculture in Nigeria include the following **except**
- A. reorganization of the rural communities.
 - B. provision of extension service.
 - C. provision of credit facilities.
 - D. rehabilitation of feeder roads.
6. The main reason for governments enforcement of efficient quarantine laws is to
- A. check the destruction of unproductive animals.
 - B. attract school leavers into agriculture.
 - C. give grants to researchers for agricultural problems.
 - D. check and control the inflow of animals and crops.
7. The most important objective of the farm settlement scheme is to
- A. supply farm tools to farmers.
 - B. provide subsidy for small scale farmers.
 - C. demonstrate that farming can be a profitable business.
 - D. mechanise agriculture.
8. In which of the following is land used for agricultural purposes?
- A. Forage production
 - B. Recreation
 - C. Mining
 - D. Road construction
9. Which of the following climatic factors is primarily necessary for photosynthesis in crop plants?
- A. Wind
 - B. Light
 - C. Rainfall
 - D. Temperature
10. An example of a biotic factor affecting crop or animal production is
- A. predator.
 - B. soil texture.
 - C. soil structure.
 - D. light.
11. The effect of high temperature on livestock production include the following **except**
- A. reduction in growth rate.
 - B. reduction in feed intake.
 - C. increase in water intake.
 - D. increase in production.

12. Which of the following is the role of organisms in soil formation?
- A. Deposition of soil particles
 - B. Breaking down of rocks
 - C. Increasing the level of soil minerals
 - D. Transporting soil particles
13. Which of these rocks is formed from sandstone?
- A. Limestone
 - B. Quartzite
 - C. Marble
 - D. Graphite
14. Soils with particle sizes ranging between 0.2 – 0.02 mm are referred to as
- A. gravel.
 - B. fine sand.
 - C. silt.
 - D. clay.
15. Which of the following types of soil is easily water logged?
- A. Sand
 - B. Clay
 - C. Loam
 - D. Silt
16. The most important horizon in a soil profile for crop production is
- A. bed rock.
 - B. weathered parent material.
 - C. sub soil.
 - D. top soil.
17. Which of the following is a micro element?
- A. Calcium
 - B. Sulphur
 - C. Phosphorus
 - D. Manganese
18. Soil fertility can be improved through the following **except**
- A. planting of cover crops.
 - B. crop rotation.
 - C. fertilizer application.
 - D. continuous cropping.

19. Which of the following farm practices will lead to the pollution of soil water?
- A. Bush burning
 - B. Crop rotation
 - C. Clean clearing
 - D. Zero grazing
20. The most suitable structure for underground drainage in farms is
- A. narrow solid pipe.
 - B. waste pipe.
 - C. perforated concrete pipe.
 - D. clay pipe.
21. The most unreliable source of power on the farm is
- A. heat engine.
 - B. wind.
 - C. electricity.
 - D. animal.
22. The farm machinery used to sow seeds and apply fertilizer at the same time is
- A. seed drill.
 - B. combine drill.
 - C. fertilizer spreader.
 - D. jab planter.
23. The farm operation which require stationary power is
- A. land clearing.
 - B. threshing.
 - C. ploughing.
 - D. harrowing.
24. The following are all secondary tillage implements except the
- A. disc harrow.
 - B. spring tine harrow.
 - C. disc plough.
 - D. disc ridger.
25. An instrument used to determine height or elevation of a point relative to another during survey on the farm is the
- A. arrow.
 - B. ranging pole.
 - C. cross staff.
 - D. Gunter's chain.

Turn over

26. A variety of oil palm is
- Amelonado.*
 - Acuminata.*
 - Tenera.*
 - Trinitario.*
27. Which of the following crops has not lost its ability to propagate by seeds despite being propagated by vegetative means for many years?
- Yam
 - Cassava
 - Cocoyam
 - Spinach
28. Which of the following statements is **not** a reason for pruning? To
- remove dead and diseased plant parts.
 - reduce the leaf area and allow greater light penetration.
 - encourage plant to attain a desirable shape.
 - incorporate plant matter into the soil.
29. Which of the following is **not** an advantage of cover cropping?
- Protecting soil from direct heat of the sun
 - Preventing soil erosion
 - Decreasing the population of earthworms in the soil
 - Functioning as wind breaker
30. If the yield of cowpea is 750 kg per hectare. Calculate the yield of cowpea from a 20 ha farm.
- 7,500 kg
 - 15,000 kg
 - 22,500 kg
 - 30,000 kg
31. The major reason why the moisture content of crops should be reduced before storage is to
- improve storage quality and avoid fungal infection.
 - reduce weight during transportation.
 - maintain chemical composition of the crop.
 - make crop palatable for eating.
32. A creeping perennial grass which forms rhizomes and roots freely at the nodes is
- elephant grass.
 - guinea grass.
 - gamba grass.
 - giant star grass.

33. The insect vector involved in the transmission of cassava mosaic virus is
- grasshopper.
 - termite.
 - whitefly.
 - moth.
34. Mottling and deformation of leaves in crops are symptoms of a
- viral disease.
 - bacterial disease.
 - fungal disease.
 - nematode disease.
35. Downy mildew in maize is caused by a/an
- insect.
 - fungus.
 - nematode.
 - bacterium.
36. Which of the following is best for controlling yellow streak of maize?
- Early planting and spraying with insecticides
 - Early planting and application of fungicides
 - Late planting and application of nematicides
 - Late planting and application of fungicides
37. Which of the following is **not** a method of controlling perennial weeds?
- Hand pulling
 - Use of crop rotation
 - Regular tillage
 - Use of hoes
38. Which of the following weeds is dispersed by animals?
- Crotalaria*
 - Acanthospermum hispidum*
 - Talinum triangulare*
 - Emilia sonchifolia*
39. A weed is a grass
- growing on a lawn.
 - growing on a legume farm.
 - that has been cultivated.
 - that is grazed upon by animals.

40. Which of the following corresponds to the true stomach of a simple stomach animal?
- A. Omasum
 - B. Reticulum
 - C. Abomasum
 - D. Rumen
41. The gestation period of rabbits (in days) is
- A. 15.
 - B. 21.
 - C. 31.
 - D. 42.
42. Parturition in farm animals marks the end of
- A. breeding.
 - B. mating.
 - C. gestation.
 - D. egg laying.
43. N'dama cattle are well adapted to West Africa because the breed
- A. can withstand a long period of drought.
 - B. is resistant to trypanosomiasis.
 - C. can feed well on poor quality forages.
 - D. is gregarious.
44. Livestock feed concentrates are usually those ingredients that are high in
- A. fibre and water.
 - B. protein and energy.
 - C. vitamins and crude fibre.
 - D. fibre and vitamins.
45. Vitamin A is needed in livestock for the prevention of
- A. milk fever.
 - B. rickets.
 - C. night blindness.
 - D. beriberi.
46. Natural rangelands are **not** commonly found in areas with
- A. solar radiation.
 - B. strong wind.
 - C. high relative humidity.
 - D. low atmospheric pressure.
47. Crops grown specifically to feed animals in fresh or preserved forms are referred to as
- A. grass crops.
 - B. fodder crops.
 - C. arable crops.
 - D. cereal crops.

48. Which of the following is **not** a characteristic feature of a well prepared silage?
- Sweet aromatic smell
 - Greenish colouration
 - Very nutritive
 - Mouldy growth
49. Which of the following diseases is caused by a protozoon?
- Trypanosomiasis
 - Milk fever
 - Rinderpest
 - Anthrax
50. Which of the following is **not** involved in the life cycle of the liver fluke?
- Sheep
 - Cattle
 - Snail
 - Tick
51. The main mode of infection of rinderpest disease in cattle is through
- grazing.
 - drinking.
 - contact.
 - inhalation.
52. Which of the following methods of animal selection is based on the performance of the offspring?
- Individual selection
 - Progeny selection
 - Family selection
 - Mass selection

Study the demand schedule for an agricultural commodity below and use it to answer Questions 53 – 55.

Price (₦)	Quantity Demanded (kg)
30	200
20	240

53. Calculate the percentage change in quantity of commodity demanded.
- 10%
 - 20%
 - 30%
 - 40%

Turn over

54. Calculate the percentage change in price for the commodity.
- A. 50.0%
 - B. 40.0%
 - C. 33.3%
 - D. 23.3%
55. Find the elasticity of demand for the commodity.
- A. 0.9
 - B. 0.8
 - C. 0.6
 - D. 0.3
56. A repayable loan obtained from the bank for farm operations is known as
- A. subsidy.
 - B. credit.
 - C. subvention.
 - D. capital.
57. Which of the following is **not** true about record keeping in agricultural production?
- A. It shows the performance of the farm at a given time.
 - B. It assists in the modification of farm strategies.
 - C. It enables the farmers to purchase heavy farm machinery.
 - D. It is useful for tax purposes.
58. The process of spreading new farming techniques to farmers is commonly referred to as
- A. diffusion.
 - B. learning.
 - C. distribution.
 - D. assimilation.
59. Which of the following agricultural specialist serves as an intermediary between research organisations and the farmers?
- A. Plant pathologist
 - B. Project planning officer
 - C. Entomologist
 - D. Extension officer
60. The most popular method used by the Agricultural Development Projects in their extension service is
- A. training and visits.
 - B. individual contact.
 - C. demonstration.
 - D. farmers' festivals.

**DO NOT TURN OVER THIS PAGE
UNTIL YOU ARE TOLD TO DO SO.**

**YOU WILL BE PENALIZED SEVERELY IF YOU ARE
FOUND LOOKING AT THE NEXT PAGE BEFORE
YOU ARE TOLD TO DO SO.**

PART II

2 hours

ESSAY

[80 marks]

Answer **five** questions in all, including **one** question from each section.

Write your answers in ink, in your answer booklet.

All questions carry equal marks.

SECTION A

Answer **one** question from this section.

1. (a) Explain briefly how each of the following factors can be used to differentiate a subsistence farmer from a commercial farmer.
- (i) Land use [3 marks]
 - (ii) Finance [3 marks]
 - (iii) Illiteracy [3 marks]
 - (iv) Labour [3 marks]
- (b) State **four** reasons why farming is generally not an attractive business to the youths. [4 marks]
2. (a) List **five** tillage implements. [5 marks]
- (b) Describe **two** tillage operations in a mechanized farm. [6 marks]
- (c) State **five** ways of maintaining farm machinery. [5 marks]

SECTION B

Answer **one** question from this section.

3. (a) Mention **four** components of a fertile soil. [2 marks]
- (b) In a tabular form, compare the
- (i) physical; [10 marks]
 - (ii) chemical; [4 marks]
- properties of sand and clay.

Turn over

4. (a) State four factors which influence nutrients availability to crops. [4 marks]
- (b) Explain briefly the effects of three of the factors listed in (a) on the availability of nutrients to plants. [9 marks]
- (c) List three methods of replacing lost nutrients in the soil. [3 marks]

SECTION C

Answer one question from this section.

5. Describe the cultivation of maize under the following headings:
- (a) Land preparation; [2 marks]
- (b) Propagation; [1 mark]
- (c) Planting date; [2 marks]
- (d) Seed rate; [1 mark]
- (e) Spacing; [1 mark]
- (f) Fertilizer requirement; [2 marks]
- (g) Weeding; [1 mark]
- (h) Harvesting; [3 marks]
- (i) Storage. [3 marks]
6. State the causal organism, mode of transmission and control measures of any four of the following diseases.
- (a) Tikka [4 marks]
- (b) Groundnut rosette [4 marks]
- (c) Cocoa blackpod [4 marks]
- (d) Cassava mosaic [4 marks]
- (e) Angular leaf spot [4 marks]

SECTION D*Answer one question from this section.*

7. (a) Enumerate **six** problems militating against rabbit production in West Africa. [6 marks]
- (b) (i) Name **four** common diseases of rabbits. [4 marks]
- (ii) Discuss briefly **two** of the following diseases: Enteritis, Bloat and Helminthiasis under the headings below:
- I — causative agent; [2 marks]
- II — symptoms; [2 marks]
- III — control. [2 marks]
8. (a) State **four** advantages of siting a fish pond in the savannah area. [4 marks]
- (b) State and explain briefly **six** conditions which must be avoided in the siting of a fish pond. [12 marks]

SECTION E*Answer one question from this section.*

9. (a) Differentiate between **marketing** and **marketing functions** in agriculture. [4 marks]
- (b) Mention **four** characteristics of agricultural produce in relation to marketing. [4 marks]
- (c) List and explain briefly any **four** marketing functions in agriculture. [8 marks]
10. (a) Mention **four** desirable qualities of a farm manager. [4 marks]
- (b) State **four** problems that can be encountered by a farm manager. [6 marks]
- (c) Write short notes on the following:
- (i) farm assets, [3 marks]
- (ii) farm income statement. [3 marks]