

P5022 Nov.
W.A.S.S.C.E. 2002
AGRICULTURAL
SCIENCE 2
3 hours

Name:.....

Identification Number:.....

THE WEST AFRICAN EXAMINATIONS COUNCIL

West African Senior School Certificate Examination

November 2002

AGRICULTURAL SCIENCE 2

3 hours

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

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

- Use **HB** pencil throughout.
- If you have got a blank answer sheet, complete the top section of it as follows.
 - In the space marked *Name*, write in capital letters your **surname** followed by your **other names**.
 - In the spaces marked *Examination, Year, Subject and Paper*, write 'W.A.S.S.C.E.', '2002 NOV.', 'AGRICULTURAL SCIENCE' and '2', respectively.
 - 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.
 - 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.
 - In the box marked *Sex*, shade the space marked **M** if you are male, or **F** if you are female.
- 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.
- An example is given below. This is for a *male* candidate, whose *name* is **Chukwuma Adekunle CIROMA**, whose *Identification Number* is **5251102068**, and who is offering **Agricultural Science 2**.

THE WEST AFRICAN EXAMINATIONS COUNCIL

PRINT IN BLOCK LETTERS

Name: CIROMA CHUKWUMA ADEKUNLE Examination: WASS.C.E. Year: 2002 NOV.
Surname Other Names

Subject: AGRICULTURAL SCIENCE Paper: 2

IDENTIFICATION NUMBER	
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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
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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:	<input type="checkbox"/> M <input type="checkbox"/> F

INSTRUCTIONS TO CANDIDATES

- Use grade **HB** pencil throughout.
- Answer each question by choosing one letter and shading it like this: [A] [B] [C]
- Erase completely any answers you wish to change.
- Leave extra spaces blank if the answer spaces provided are more than you need.
- 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 practice of growing exclusively one type of crop and harvesting it before planting another on the same piece of land is

- A. monocropping.
- B. interplanting.
- C. intercropping.
- D. mixed cropping.

The correct answer is monocropping 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 you wish to change.

Do all rough work on this question paper.

Now answer the following questions.

1. Agriculture is most important to the economy of West African countries because it provides
 - A. raw materials for steel industries.
 - B. game reserves for wildlife conservation.
 - C. foreign exchange.
 - D. feeds for livestock.

2. One major factor which constrains farmers to subsistence agriculture is land
 - A. availability.
 - B. immobility.
 - C. scarcity.
 - D. fertility.

3. Commercial agriculture is preferred to subsistence agriculture because it
 - A. provides more food for the populace.
 - B. requires less capital.
 - C. does not require the involvement of skilled persons.
 - D. is centred on cash crop production.

4. In order to eliminate food shortage, farmers should
- cultivate more varieties of crops.
 - practise land tenure by inheritance.
 - shift from crop to animal production.
 - construct farm buildings.
5. Agricultural development in West Africa is **mostly** affected by
- absence of markets for foodstuffs.
 - inadequate use of improved crops and animal breeds.
 - inadequate transport network.
 - poor storage facilities.
6. *Subsidy* is any assistance given by the government to farmers which could be
- a reduction in the supply of farm inputs.
 - a reduction in the price of farm inputs.
 - an increase in interest rates on loans.
 - an increase in the price of implements.
7. Land quality in agriculture is usually adversely affected by
- trampling.
 - erosion.
 - weeding.
 - irrigation.
8. Rainfall influences agriculture in the following ways **except**
- supplying soil moisture necessary for the growth of crops.
 - determining types of crops to be grown in an area.
 - hastening drying of grains.
 - determining farming system to be practised.
9. Rocks formed from accumulation and compaction of sand, gravel, plant and animal remains are known as
- metamorphic rocks.
 - igneous rocks.
 - sedimentary rocks.
 - intrusive rocks.
10. The soil fractions that are richest in nutrients are
- sand and silt.
 - loam and sand.
 - clay and silt.
 - clay and loam.

11. The water which is held in the fine pores of soils by surface tension is known as
- gravitational water.
 - soil water.
 - capillary water.
 - hygroscopic water.
12. The advantages of mulching do **not** include
- control of soil temperature.
 - addition of decomposing organic matter.
 - improving soil structure.
 - reducing the soil anion-cation action.
13. Chlorosis observed along the veins of leaves is a characteristic symptom for the deficiency of
- calcium.
 - magnesium.
 - sulphur.
 - sodium.
14. Which of the following farm practices does **not** have a significantly harmful effect on the soil?
- Crop rotation
 - Land clearing
 - Overgrazing
 - Bush burning
15. Which of the following practices will lead to loss of nutrients from the soil?
- Manuring
 - Mulching
 - Crop harvesting
 - Cultivation
16. Sources of irrigation water include the following **except**
- lakes.
 - rivers.
 - streams.
 - ocean.
17. Which of the following methods of irrigation can be used to apply foliar fertilizers and pesticides?
- Furrow irrigation
 - Basin irrigation
 - Flooding
 - Sprinkler irrigation

18. Land which requires drainage is one
- A. with a high nutrient-holding capacity.
 - B. with a high water table.
 - C. under irrigation.
 - D. under continuous cropping.
19. Wind power is most unsuitable for
- A. milling livestock feed.
 - B. milking dairy animals.
 - C. pumping water.
 - D. generating electricity.
20. The source of farm power that can be affected by pests is
- A. water.
 - B. biogas.
 - C. animal.
 - D. wind.
21. Which of the following groups of equipment requires electric power for its operation?
- A. Refrigerator, incubator, corn mill and dryer
 - B. Dryer, battery cage, grinder and egg candler
 - C. Incubator, mower, rice mill and knapsack sprayer
 - D. Water pump, refrigerator, dryer and plough
22. Which of the following requires daily checking in a tractor?
- A. Spark plug
 - B. Engine oil
 - C. Air cleaner
 - D. Battery
23. Farm surveying is conducted for the following reasons **except**
- A. determining the location of farm structures.
 - B. designing and constructing drainage canals.
 - C. setting out areas of farmland.
 - D. determining the height of farmstead.
24. A disadvantage of mechanization is that it
- A. reduces drudgery during farm work.
 - B. increases scale of operation.
 - C. displaces many workers.
 - D. reduces farm hazards.

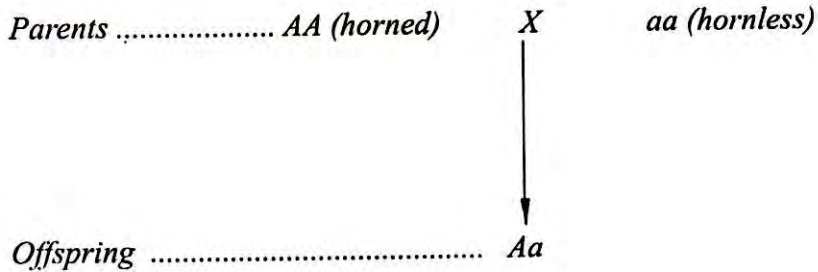
25. Which of the following crops does **not** require nursery?
- A. Cocoa
 - B. Mango
 - C. Maize
 - D. Tomato
26. Dura, Tenera and Pisifera are all cultivated varieties of
- A. coconut.
 - B. oil palm.
 - C. rubber.
 - D. banana.
27. If the recommended spacing for planting plantain is $4m \times 4m$, calculate the plant population per hectare of farmland.
- A. 16
 - B. 63
 - C. 625
 - D. 1600
28. The non-oil crop among the following is
- A. coconut.
 - B. beniseed.
 - C. melon.
 - D. cowpea.
29. *Fodder crops* refer to crops
- A. growing in the wild.
 - B. grown specifically for human consumption.
 - C. grown to feed animals in fresh or preserved form.
 - D. used for controlling erosion.
30. The practice of keeping forests in good condition for social and economic uses is
- A. forest regulation.
 - B. forest management.
 - C. taungya system.
 - D. forest regeneration.
31. Damping-off is a disease caused by
- A. fungus.
 - B. virus.
 - C. bacterium.
 - D. nematode.

32. Cassava mosaic disease is transmitted by
- A. white fly.
 - B. black fly.
 - C. aphids.
 - D. grasshoppers.
33. A whitish gall on a maize cob is a symptom of maize
- A. streak.
 - B. smut.
 - C. blight.
 - D. rust.
34. Aphids are
- A. biting and sucking insects.
 - B. boring insects.
 - C. piercing and sucking insects.
 - D. biting and chewing insects.
35. Which of the following is **not** a biological method of weed control?
- A. Introducing insects to control weeds
 - B. Allowing the crops to compete with the weeds
 - C. Planting leguminous cover crops
 - D. Uprooting the weeds
36. *Character inheritance* is the
- A. transfer of pollen from one plant to another.
 - B. transfer of traits from one plant to another.
 - C. selection of good gametes for fertilization.
 - D. masking of one gene effect by the other.
37. Fertilization in farm animals occurs in the
- A. oviduct.
 - B. cervix.
 - C. vulva.
 - D. infundibulum.
38. The process of giving birth to young ones in pigs is known as
- A. kidding.
 - B. kindling.
 - C. farrowing.
 - D. calving.

39. Which of the following is **not** a part of the reproductive system of a hen?
- A. Funnel
 - B. Isthmus
 - C. Ovary
 - D. Ureter
40. The hormone responsible for maintaining pregnancy in farm animals is
- A. testosterone.
 - B. progesterone.
 - C. oxytocin.
 - D. relaxin.
41. Which of the following is **not** an effect of high temperature on poultry production?
- A. Increased feed intake
 - B. Increased water consumption
 - C. Decreased egg production
 - D. Increased rate of panting
42. A good silage should be free of
- A. moulds.
 - B. nutrients.
 - C. moisture.
 - D. fibre.
43. Which of the following is **not** a breed of rabbits?
- A. Newzealand white
 - B. Landrace
 - C. Chinchilla
 - D. Californian white
44. The economic importance of poultry keeping includes the following **except**
- A. production of ornamental feathers.
 - B. provision of food.
 - C. provision of employment.
 - D. generation of income.
45. Good management practices in pig production include the following **except**
- A. feeding.
 - B. candling.
 - C. castration.
 - D. deworming.

46. Which of the following nutrients do weaned piglets require most?
- A. Minerals
 - B. Fats
 - C. Carbohydrates
 - D. Proteins
47. Which of the following vitamins reduces fertility when deficient?
- A. Vitamin A
 - B. Vitamin E
 - C. Vitamin C
 - D. Vitamin B
48. The causal organism of anthrax is
- A. bacterium.
 - B. virus.
 - C. fungus.
 - D. protozoon.
49. An example of poultry disease caused by protozoa is
- A. aspergillosis.
 - B. coccidiosis.
 - C. red water.
 - D. foot and mouth.
50. Which of the following is **not** an economic importance of ticks in animal production?
- A. Destruction of hides and skin
 - B. Transmission of diseases
 - C. Causing loss of production
 - D. Attaching themselves to hairs of livestock

Study the cross below and use it to answer Questions 51 – 53.



51. The gametes in the above cross are
- A and a .
 - all A .
 - all a .
 - all X .
52. The phenotype of the offspring is
- horned.
 - hornless.
 - dwarf.
 - short-tailed.
53. Which of the following factors will least affect the performance of the offspring after it has been produced?
- Level of feeding
 - Type of housing
 - General management
 - Genetic make-up
54. The role of a farm manager includes the following **except**
- planning farm operation.
 - coordinating the various farm activities.
 - reporting any new findings to the Agricultural Research Stations.
 - deciding on adjustments to make on the farm.
55. The supply of a farm produce to markets is **mostly** dictated by
- the government.
 - the farmers.
 - climatic conditions.
 - its perishability.

56. Farmers are unable to obtain credit from banks due to their inability to provide
- A. collateral.
 - B. interest.
 - C. subsidies.
 - D. implements.
57. The wear and tear of farm structures over time is described as
- A. appreciation.
 - B. depreciation.
 - C. capitalisation.
 - D. salvage value.
58. Which marketing agent normally makes the biggest profit margin? The
- A. processor
 - B. producer
 - C. retailer
 - D. Marketing Board
59. Which of the following marketing agents do not excessively exploit the farmers?
- A. Licensed buying agents
 - B. Middlemen
 - C. Co-operative societies
 - D. Retailers
60. One of the qualities of a good extension agent is that he should
- A. be good at entertainment.
 - B. have innovative ideas.
 - C. not socialize with farmers.
 - D. be a good solicitor.

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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.**

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PART II

2 hours

ESSAY

[80 marks]

There are **five** sections in this part. Answer **one** question only from each section.

Write your answers in ink, in your answer booklet.

All questions carry equal marks.

SECTION A

Answer **one** question **only** from this section.

1. (a) Define *communal land tenure system*. [2 marks]
- (b) State **three** advantages and **five** disadvantages of the communal land tenure system. [8 marks]
- (c) State **two** other land tenure systems in your country, giving **one** advantage and **one** disadvantage of each. [6 marks]
2. (a) List and discuss **five** limitations of farm mechanisation. [10 marks]
- (b) State **four** ways by which farmers can be encouraged to adopt farm mechanisation. [6 marks]

SECTION B

Answer **one** question **only** from this section.

3. Give **two** advantages and **two** disadvantages of **each** of the following farming practices:
 - (a) overgrazing;
 - (b) bush burning;
 - (c) crop rotation;
 - (d) mixed cropping.

[16 marks]
4. (a) Describe **five** ways by which crop nutrients are lost from the soil. [10 marks]
- (b) State **six** roles of organic fertilizers to the soil. [6 marks]

SECTION C

Answer one question only from this section.

5. (a) Describe the following processes as methods of forest development:
- (i) regeneration;
 - (ii) afforestation. [8 marks]
- (b) List **eight** benefits of forestry. [8 marks]
6. Describe **eight** side effects of various preventive and control measures of pests. [16 marks]

SECTION D

Answer one question only from this section.

7. (a) Explain the term *lactation*. [2 marks]
- (b) With the aid of a well labelled diagram, describe the structure of a farm animal mammary gland. [14 marks]
8. (a) Describe pig management under the following headings:
- (i) housing; [11 marks]
 - (ii) creep feeding. [4 marks]
- (b) Mention **one** method of preventing anaemia in piglets. [1 mark]

SECTION E

Answer one question only from this section.

9. (a) Define
- (i) *supply*;
 - (ii) *demand*. [4 marks]
- (b) List **four** factors **each** that affect:
- (i) *supply*; [4 marks]
 - (ii) the price of an agricultural produce. [4 marks]
- (c) State **one** importance of the law of diminishing returns to farmers. [2 marks]
- (d) Explain the term *income elasticity*. [2 marks]
10. (a) Define *Agricultural Extension*. [2 marks]
- (b) State **eight** aims of Agricultural Extension. [8 marks]
- (c) List and explain **two** main types of extension methods. [6 marks]

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