

S5022 June
W.A.S.S.C.E. 2001
AGRICULTURAL
SCIENCE 2
3 hours

Name:.....

Identification Number:.....

THE WEST AFRICAN EXAMINATIONS COUNCIL
West African Senior School Certificate Examination

June 2001

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.', '2001 JUNE', '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 **4251102068**, and who is offering **Agricultural Science 2**.

THE WEST AFRICAN EXAMINATIONS COUNCIL

PRINT IN BLOCK LETTERS

Name: CIROMA CHUKWUMA ADEKUNLE Examination: W.A.S.S.C.E. Year: 2001 JUNE
Surname Other Names

Subject: AGRICULTURAL SCIENCE Paper: 2

IDENTIFICATION NUMBER	
4	0 1 2 3 4 5 6 7 8 9
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SUBJECT CODE	
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SEX	
Indicate your sex by shading the space marked M (for Male) or F (for Female) in this box:	M <input type="checkbox"/> F <input type="checkbox"/>

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.

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

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.

[A]

[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. Which of the following occupations is **not** associated with agriculture?
 - A. Production of polythene
 - B. Production of honey
 - C. Fertilizer production
 - D. Saw-milling

2. Which of the following factors **most** influences the standard of living of individuals in a community?
 - A. Food crop production
 - B. Availability of machinery
 - C. Production of raw materials
 - D. Foreign exchange earnings

3. Subsistence farming is **not** characterised by
 - A. the use of crude farm tools.
 - B. the use of extended family holdings.
 - C. low application of fertilizers.
 - D. low yields.

4. The factors hindering the development of agriculture in West Africa include the following **except**
- A. land tenure system.
 - B. inadequate rural infrastructure.
 - C. lack of rural markets.
 - D. poor transportation facilities.
5. Government agricultural regulations are made to control the following **except** the
- A. spread of diseases.
 - B. exploitation of natural resources.
 - C. control of crops and animals quality.
 - D. use of exotic breeds.
6. The primary role of government in agricultural development is to
- A. provide improved homesteads for farmers.
 - B. formulate good agricultural policies.
 - C. provide extension services.
 - D. sell farmers' produce through export.
7. Which of the following statements about land is **not** correct?
- A. It is a basic requirement for production.
 - B. Its supply is limited.
 - C. Indiscriminate use can cause it to deteriorate.
 - D. It can be relocated.
8. Poaching is prohibited in game reserves in order to
- A. preserve wildlife.
 - B. starve hunters.
 - C. reduce wildlife population.
 - D. protect hunters from wild animals.
9. In crop plants, high temperatures may cause
- A. premature dropping of fruits.
 - B. delayed ripening of fruits.
 - C. formation of woody stems.
 - D. prolonged drying of seeds.
10. A physical factor affecting crop production is
- A. man.
 - B. temperature.
 - C. micro organisms.
 - D. vegetation.

11. The most active agent of physical weathering of rocks in arid regions is
- ice.
 - water.
 - wind.
 - animals.
12. The chemical weathering that is responsible for changing haematite to limestone is
- hydration.
 - solution.
 - oxidation.
 - hydrolysis.
13. Liming is used to correct soil's
- neutrality.
 - acidity.
 - cation exchange capacity.
 - porosity.
14. A vertical section through the soil is referred to as soil
- profile.
 - horizon.
 - structure.
 - texture.
15. In the determination of soil texture, a soil sample was found to be smooth and powdery when dry and formed a cast when wet. That soil is
- clay.
 - silt.
 - loam.
 - sand.
16. Which of the following mineral elements is essential for chlorophyll formation?
- Sodium
 - Molybdenum
 - Boron
 - Magnesium
17. Replenishing soil nutrients involves the following **except**
- leaching.
 - fallowing.
 - cover cropping.
 - liming.

18. Which of the following is **not** a source of farm power?
- A. Wind
 - B. Bull
 - C. Tractor
 - D. Plough
19. Which of the following sources of farm power will assist in the tillage of more land per unit time?
- A. Man
 - B. Animal
 - C. Wind
 - D. Machine
20. A farm tool used for harvesting heads of rice is the
- A. shear.
 - B. scateur.
 - C. sickle.
 - D. rake.
21. Which of the following gives the correct order of usage of tillage implements on a virgin land?
- A. Harrow → Ridger → Plough
 - B. Ridger → Plough → Harrow
 - C. Harrow → Plough → Ridger
 - D. Plough → Harrow → Ridger
22. *Farm surveying* can be defined as the
- A. levelling of land during road construction.
 - B. sighting of structures through a theodolite.
 - C. making measurements on land from which maps are drawn.
 - D. estimation of the type and properties of soil on a farm.
23. Farm survey equipment include the following **except**
- A. cross staff.
 - B. Abney level.
 - C. datum.
 - D. chain.
24. The type of survey used in determining the flatness or steepness of a farmland is
- A. chain survey.
 - B. topographical survey.
 - C. soil survey.
 - D. traverse survey.

25. Which of the following cereal crops most requires nursery practices?
- A. Maize
 - B. Rice
 - C. Millet
 - D. Guinea corn
26. The maturity period of groundnut in months is
- A. 1 – 2.
 - B. 2 – 3.
 - C. 4 – 5.
 - D. 6 – 7.
27. Oil palm trees do well in soils with pH level of
- A. 2.5 – 3.5.
 - B. 3.5 – 4.5.
 - C. 5.5 – 6.5.
 - D. 6.5 – 7.5.
28. The optimum temperature for storing yam tuber under cold storage is
- A. 7°C.
 - B. 9°C.
 - C. 13°C.
 - D. 15°C.
29. Which of the following is **not** an agricultural significance of stems to crops?
- A. Modified forms serve as food for man.
 - B. Provision of timber
 - C. Useful as materials for propagation
 - D. Useful for cross-breeding in crops.
30. During the production of palm oil, the oil palm fruits are boiled in order to
- A. extract the raw oil from the epicarp.
 - B. prevent high level of oil rancidity.
 - C. ease separation of mesocarp from the endocarp.
 - D. extract oil from the kernel.
31. If the recommended seed rate of maize is 20 kg per hectare, calculate the amount of seeds required for 1.8 hectares of farmland.
- A. 11.0 kg
 - B. 16.0 kg
 - C. 26.0 kg
 - D. 36.0 kg

32. The main vertebrate pests of rice are

- A. squirrels.
- B. quela birds.
- C. bush fowls.
- D. monkeys.

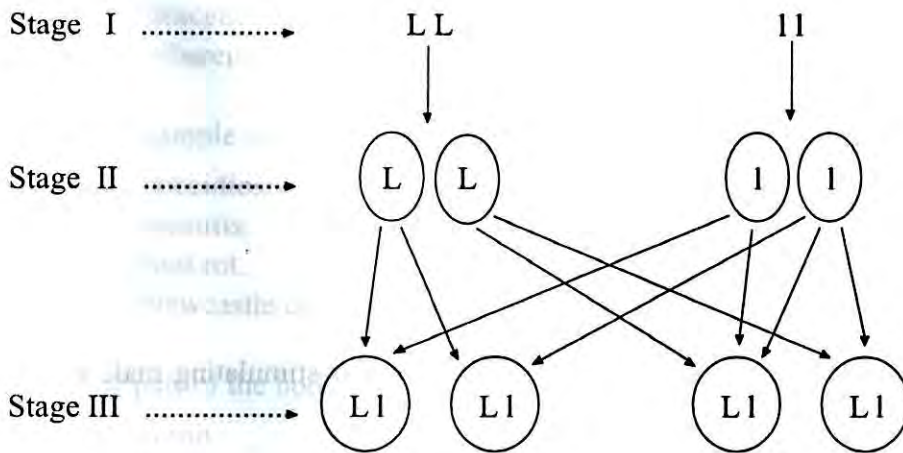
33. Which of the following statements is true about the effect of nematodes on plants?

- A. The plants wilt.
- B. Flowering is induced.
- C. The roots grow faster.
- D. Leaves develop a mosaic appearance.

34. Which of the following statements is **not** true about weeds?

- A. Some weeds are parasitic on crop plants.
- B. Weeds may harbour crop diseases.
- C. All weeds are grasses.
- D. Weeds reduce the nutritional value of a pasture.

Below is the crossing of a long fruited tomato (L) with a round fruited tomato plant (I). Use it to answer questions 35 to 38.



35. What will be the genotype ratio of the second filial generation?

- A. 3:1
- B. 1:3
- C. 1:2:1
- D. 1:1:2

36. The production of **L** and **I** in stage II is achieved through the process of
- A. segregation.
 - B. assortment.
 - C. mutation.
 - D. recessiveness.
37. Assuming complete dominance, the tomato fruits in stage III are all
- A. long.
 - B. short.
 - C. oval.
 - D. shapeless.
38. The plants in stage III are all
- A. heterozygotes.
 - B. homozygotes.
 - C. mutants.
 - D. polyhybrids.
39. In a tannery, the raw materials for the manufacture of leather are
- A. hides and hair.
 - B. skin and fur.
 - C. hides and skin.
 - D. hair and fur.
40. The part of the digestive tract of birds which secrete gastric juice is the
- A. oesophagus.
 - B. proventriculus.
 - C. gizzard.
 - D. crop.
41. The hormone which is secreted by the testes and is responsible for stimulating male sexual characteristics is known as
- A. progesterone.
 - B. testosterone.
 - C. gonadotropin.
 - D. oestrogen.
42. Production of chicks on a large scale can be achieved using a/an
- A. incubator.
 - B. broiler.
 - C. candler.
 - D. debeaker.

43. A broiler starter feed should contain
- high protein but low carbohydrate content.
 - low protein but high carbohydrate content.
 - low protein and carbohydrate content.
 - high protein and carbohydrate content.
44. In animal nutrition, iodine is essential for the production of
- thyroxin.
 - oxytocin.
 - insulin.
 - progesterone.
45. The natural ability of the body of farm animals to resist invasion of diseases is called
- quarantine.
 - vaccination.
 - immunity.
 - isolation.
46. In cattle, constant coughing with production of blood stained sputum are signs of
- rinderpest.
 - anthrax.
 - brucellosis.
 - tuberculosis.
47. An example of a viral disease of farm animals is
- coccidiosis.
 - mastitis.
 - foot rot.
 - Newcastle disease.
48. The part of the body normally affected by fowl pox disease is the
- comb.
 - beak.
 - feather.
 - vent.
49. The eradication of tsetse flies can prevent
- coccidiosis.
 - aspergillosis.
 - tuberculosis.
 - trypanosomiasis.

50. A tapeworm absorbs food from its host through the
- mouth.
 - scolex.
 - hook.
 - body surface.
51. A herbivorous fish specie which breeds fast and is suitable for culture in a pond is
- Clarias lazera*.
 - Tilapia zillii*.
 - Gymnarchus niloticus*.
 - Chrysichthyis nigrodigitatus*.
52. Which of the following is **not** true about adding organic manure to a fish pond? It
- reduces the pH of water considerably.
 - accelerates the growth of planktons.
 - leads to water pollution.
 - leads to the depletion of oxygen.
53. The type of labour available to peasant farmers is
- family labour.
 - paid labour.
 - skilled labour.
 - migrant labour.
54. The factor of production whose reward is profit is
- land.
 - labour.
 - capital.
 - entrepreneurship.
55. The demand for agricultural produce is generally
- elastic.
 - inelastic.
 - unitary.
 - static.
56. Given a normal situation, what effect will an increase in the supply of cowpea have on its market price? The price
- increases.
 - decreases.
 - is unaffected.
 - is unpredictable.

57. Which of the following is an effect of stability of market price in agricultural production?
- A. Profit of the producer would be constant with constant input cost.
 - B. Wholesalers earn more from sales.
 - C. Profit of the retailer will be decreased.
 - D. Consumers will look for cheaper alternatives.
58. Rural farmers mostly obtain loans from
- A. Government.
 - B. International Monetary Fund.
 - C. Merchant Banks.
 - D. Money lenders.
59. Marketing processes do **not** include
- A. production.
 - B. assembling.
 - C. distribution.
 - D. processing.
60. Artificial scarcity of agricultural produce is often caused by the following marketing agents **except**
- A. farmers.
 - B. wholesalers.
 - C. middlemen.
 - D. co-operatives.

**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, 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) State **four** merits of **each** of the following:
- (i) agriculture;
 - (ii) forestry;
 - (iii) wildlife conservation. [12 marks]
- (b) List **four** non-agricultural uses of land. [4 marks]
2. (a) Describe briefly **four** types of individual land tenure systems. [8 marks]
- (b) List **four** advantages and **four** disadvantages of the land use act. [8 marks]

SECTION B

Answer one question from this section.

3. (a) Discuss **three** effects of **each** of the following factors on crop production:
- (i) water;
 - (ii) air;
 - (iii) soil microbes. [9 marks]
- (b) List **three** edaphic and **four** climatic factors that affect crop productivity. [7 marks]

4. (a) Explain briefly the processes of formation of
- (i) igneous rocks;
 - (ii) sedimentary rocks;
 - (iii) metamorphic rocks.
- [9 marks]
- (b) Give **two** examples of **each** of igneous and metamorphic rocks and **three** examples of sedimentary rocks.
- [7 marks]

SECTION C

Answer one question from this section.

5. Explain pasture management practices under the following sub-headings:
- (a) land preparation; [3 marks]
 - (b) **three** methods of propagation; [3 marks]
 - (c) **two** methods of sowing; [2 marks]
 - (d) fertilizer application; [1 mark]
 - (e) grazing; [3 marks]
 - (f) **four** management practices other than fertilizing and grazing. [4 marks]
6. Give an account of the production of banana, using the following sub-headings:
- (a) **one** common variety; [1 mark]
 - (b) planting materials; [2 marks]
 - (c) propagation; [3 marks]
 - (d) husbandry; [3 marks]
 - (e) **two** common pests; [2 marks]
 - (f) **two** common diseases and how **each** is controlled; [4 marks]
 - (g) maturity period. [1 mark]

SECTION D

Answer **one** question from this section.

7. (a) Write short notes on the following:
- (i) maintenance ration;
 - (ii) production ration;
 - (iii) balanced ration;
 - (iv) malnutrition. [8 marks]
- (b) Mention **four** factors normally considered when deciding the type of feed an animal should be placed on. [8 marks]
8. (a) Describe with the aid of a diagram the stomach of a **named** ruminant. [13 marks.]
- (b) State **three** functions of the first compartment of the stomach of a ruminant. [3 marks]

SECTION E

Answer **one** question from this section.

9. (a) Explain the following terms:
- (i) appreciation; [2 marks]
 - (ii) depreciation; [2 marks]
 - (iii) salvage value. [2 marks]
- (b) List **two** items on the farm which will normally appreciate in value. [2 marks]
- (c) A farmer bought a fairly used Fiat tractor for ₦12,000.00 in 1988. He later sold it for ₦3,000.00 in 1997 when he discovered that it was expensive to maintain.
- Find the tractor's:
- (i) salvage value;
 - (ii) overall depreciation;
 - (iii) annual depreciation. [8 marks]

10. (a) Briefly explain

(i) agricultural finance;

[2 marks]

(ii) agricultural credit.

[2 marks]

(b) Explain **four** significance of agricultural finance.

[8 marks]

(c) Mention **one** problem farmers encounter in obtaining credits from the following credit sources:

(i) commercial banks;

(ii) community banks;

(iii) money lenders;

(iv) family sources.

[4 marks]