

AGRIC. SCIENCE (TYPE B)

14

PAPER II

Answer **five** questions only, **one** from each section.

SECTION A

1. (a) i. Define Agriculture. (2 marks)
ii. Mention **six** branches of agriculture. (6 marks)
(b) State **three** advantages of disc plough over mouldboard plough. (3 marks)
(c) Give **five** daily maintenance practices to be carried out on a tractor to ensure its efficiency. (5 marks)
2. (a) Mention **one** major function each of the following parts of a disc plough:
 - i. Beam (1 mark)
 - ii. Scraper (1 mark)
 - iii. Furrow wheel (1 mark)
 - iv. Coupling point (1 mark)
(b) Enumerate **four** sources of farm power. (4 marks)
(c) List **four** advantages of land use decree in Nigeria. (4 marks)
(d) State **four** reasons for establishing Agricultural Research Institute. (4 marks)

SECTION B

3. State **four** effects each of the following farm practices on soil:
 - i. Bush burning (4 marks)
 - ii. Ploughing (4 marks)
 - iii. Organic manuring (4 marks)
 - iv. Clean clearing (4 marks)

4. (a) Mention **four** methods through which nutrients in the soil can be replenished. (4 marks)
- (b) Enumerate **four** properties of sandy soil. (4 marks)
- (c) State **four** benefits of mulching. (4 marks)
- (d) List **four** factors of soil formation. (4 marks)

SECTION C

5. (a) Discuss Cocoa production under the following headings:
- i. Climatic requirement (1 mark)
 - ii. Soil requirement (1 mark)
 - iii. **Three** cultural practices (3 marks)
 - iv. Method of propagation (1 mark)
 - v. **Two** diseases (2 marks)
- (b) State **four** importance of forest to man. (4 marks)
- (c) Mention **four** effects of diseases on crops. (4 marks)
6. (a) State **three** effects of weevil on maize. (3 marks)
- (b) Give **five** economic importance of weeds in agriculture. (5 marks)
- (c) List **four** control measures of insect pests on stored grains. (4 marks)
- (d) Mention **four** factors that affect the productivity of pasture. (4 marks)

SECTION D

7. (a) Copy and complete Table 2.1.

Table 2.1

Nutrient	Sources	Function
Protein	i. _____ ii. _____	i. _____
Carbohydrate	i. _____ ii. _____	i. _____
Fats and Oil	i. _____ ii. _____	i. _____

(9 marks)

- (b) Mention **four** signs of heat in a farm animal. (4 marks)
- (c) Itemise **three** disadvantages of deep litter system in poultry management. (3 marks)

8. (a) Define the following terms as used in animal improvement:

- i. Artificial insemination (2 marks)
- ii. Line-breeding (2 marks)
- iii. Crossbreeding (2 marks)

- (b) State **two** functions of testosterone in a male farm animal. (2 marks)

- (c) List **four** methods of identification in cattle production. (4 marks)

- (d) State **two** reasons each for carrying out the following animal management practices:

- i. Castration (2 marks)
- ii. Dehorning (2 marks)

SECTION E

- (a) Define Agricultural Extension. (2 marks)
- (b) Enumerate **six** roles of an Agricultural Extension worker. (6 marks)
- (c) Mention **four** advantages of middlemen in agricultural marketing. (4 marks)
- (d) List **four** functions of marketing in agricultural production. (4 marks)
- (a) List **three** sources of farm finance. (3 marks)
- (b) State **six** roles of cooperative organisations in agricultural production. (6 marks)
- (c) Discuss **four** challenges faced by an agricultural extension worker in the discharge of his/her duties. (4 marks)
- (d) State **three** advantages of individual method of disseminating information. (3 marks)

(1ai)

Agriculture is the science, art and business of cultivating the soil, growing crops, and rearing animals for the production of food, fibre, raw materials and other useful products for human use.

(1aii)

(i) Crop production

(ii) Animal production (Livestock farming)

- (iii) Forestry
- (iv) Fisheries
- (v) Agricultural Engineering
- (vi) Agricultural Economics

(1b)

- (i) It works effectively on hard, dry and sticky soils.
- (ii) It can cut through weeds and crop residues without clogging.
- (iii) It covers a wider area faster, thereby increasing field efficiency.

(1c)

- (i) Check and maintain the engine oil at the correct level.
 - (ii) Check the radiator and ensure there is enough cooling water.
 - (iii) Inspect tyre pressure and tighten loose wheel nuts.
 - (iv) Lubricate all moving parts according to the manufacturer's specification.
 - (v) Clean the tractor after use and inspect for leaks, worn or damaged parts.
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(2a)

- (i) Beam: supports the implement and connects all the working parts of the disc plough.
- (ii) Scraper: removes soil sticking to the disc to ensure smooth operation.
- (iii) Furrow Wheel: guides and stabilises the plough while maintaining the correct depth of ploughing.
- (iv) Coupling Point: attaches the disc plough securely to the tractor.

(2b)

- (i) Human power
- (ii) Animal power
- (iii) Mechanical power (tractors, engines)
- (iv) Electrical power

(2c)

- (i) Ensures easier access to land for agricultural development.
- (ii) Reduces land disputes through government regulation.
- (iii) Promotes proper planning and allocation of land.
- (iv) Enables government to acquire land for public and agricultural purposes.

(2d)

- (i) To develop improved crop and livestock varieties.
 - (ii) To carry out research on modern farming techniques.
 - (iii) To solve agricultural production problems such as pests and diseases.
 - (iv) To transfer research findings and innovations to farmers through extension services.
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(3)

Bush Burning:

- (i) Destroys beneficial soil microorganisms.
- (ii) Burns organic matter (humus), thereby reducing soil fertility.
- (iii) Leaves the soil exposed to erosion by wind and water.
- (iv) Causes loss of soil moisture and reduces the water-holding capacity of the soil.

Ploughing:

- (i) Loosens the soil and improves aeration.
- (ii) Improves water infiltration and drainage.
- (iii) Brings plant nutrients to the surface for crop use.
- (iv) Encourages root penetration and better crop establishment.

Organic Manuring:

- (i) Increases soil fertility by adding nutrients.
- (ii) Improves soil structure and texture.
- (iii) Increases the soil's water-holding capacity.
- (iv) Promotes the activities of beneficial soil microorganisms.

Clean Clearing:

- (i) Reduces competition between crops and weeds.
 - (ii) Exposes the soil to erosion if left uncovered.
 - (iii) Makes land preparation and cultivation easier.
 - (iv) Reduces the amount of organic matter returned to the soil.
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(4a)

- (i) Application of organic manure.
- (ii) Application of inorganic (chemical) fertilisers.
- (iii) Crop rotation involving legumes.
- (iv) Bush fallowing or cover cropping.

(4b)

- (i) Sandy soil has large particle sizes.
- (ii) It is highly porous and well aerated.
- (iii) It has low water-holding capacity.
- (iv) It is low in nutrients due to rapid leaching.

(4c)

- (i) Conserves soil moisture.
- (ii) Suppresses weed growth.
- (iii) Reduces soil erosion.
- (iv) Adds organic matter to the soil when it decomposes.

(4d)

- (i) Parent material.
 - (ii) Climate.
 - (iii) Living organisms.
 - (iv) Topography (relief).
-

(5a)

Climatic Requirement: cocoa grows well in areas with high annual rainfall (about 1,500–2,500 mm), warm temperatures (21–32°C), high humidity and partial shade during its early stage of growth.

Soil Requirement: it requires deep, fertile, well-drained loamy soil rich in organic matter with a slightly acidic pH.

Three Cultural Practices:

- (i) Weeding: regular removal of weeds to reduce competition for nutrients, water and sunlight.
- (ii) Mulching: organic materials are spread around the base of the trees to conserve moisture and improve soil fertility.
- (iii) Pruning: removal of dead and overcrowded branches to encourage healthy growth and increase yield.

Method of Propagation: mainly by seeds (it can also be propagated vegetatively by budding or grafting).

Two Diseases:

- (i) Black pod disease
- (ii) Swollen shoot disease

(5b)

- (i) Provides timber for building and furniture.
- (ii) Supplies fuel wood and charcoal.
- (iii) Conserves soil and prevents erosion.
- (iv) Provides habitat for wildlife and maintains ecological balance.

(5c)

- (i) Reduces crop yield.
 - (ii) Produces poor-quality farm produce.
 - (iii) Causes wilting, stunted growth or death of crops.
 - (iv) Leads to economic losses for farmers.
-

(6a)

- (i) Causes holes in maize grains.
- (ii) Reduces the weight and quality of grains.
- (iii) Lowers the germination ability of maize seeds.

(6b)

- (i) Weeds help to reduce soil erosion by covering the soil.
- (ii) Some weeds are used as livestock feed.
- (iii) Some serve as medicinal plants.
- (iv) Weeds add organic matter to the soil when they decompose.
- (v) Some weeds provide nectar for bees used in honey production.

(6c)

- (i) Dry grains thoroughly before storage.
- (ii) Use recommended insecticides or fumigants.
- (iii) Store grains in clean, airtight containers or silos.
- (iv) Regularly inspect and remove infested grains.

(6d)

- (i) Amount and distribution of rainfall.
 - (ii) Soil fertility and soil type.
 - (iii) Grazing intensity (stocking rate).
 - (iv) Weed, pest and disease infestation.
-

(7a)

[TABULATE PLEASE]

Under Nutrient

- (i) Protein
- (ii) Carbohydrate
- (iii) Fats and Oil

Under Sources

- (i) Protein: fish meal, soybean meal
- (ii) Carbohydrate: maize, cassava
- (iii) Fats and Oil: palm oil, groundnut cake

Under Functions

- (i) Protein: builds and repairs body tissues; promotes growth
- (ii) Carbohydrate: supplies energy for body activities
- (iii) Fats and Oil: provides concentrated energy and aids absorption of fat-soluble vitamins

(7b)

- (i) Restlessness and frequent bellowing.

- (ii) Swollen, reddish vulva with mucus discharge.
- (iii) Mounting other animals or standing to be mounted.
- (iv) Reduced feed intake and increased activity.

(7c)

- (i) Rapid spread of diseases and parasites due to close contact among birds.
 - (ii) Wet litter may produce ammonia gas, causing respiratory problems.
 - (iii) High cost of litter materials and frequent replacement.
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(8a)

- (i) Artificial Insemination: the introduction of semen collected from a healthy male animal into the reproductive tract of a female animal by artificial means without natural mating.
- (ii) Line-breeding: a breeding system in which closely related animals from the same superior family line are mated to preserve and improve desirable characteristics.
- (iii) Crossbreeding: the mating of animals belonging to two different breeds in order to combine desirable traits and improve performance.

(8b)

- (i) Stimulates the development of male reproductive organs and secondary sexual characteristics.
- (ii) Promotes sperm production and sexual maturity.

(8c)

- (i) Ear tagging
- (ii) Branding
- (iii) Tattooing
- (iv) Ear notching

(8d)

Castration:

- (i) To control breeding and prevent indiscriminate mating.
- (ii) To improve meat quality and make animals easier to manage.

Dehorning:

- (i) To prevent injuries among animals and handlers.
 - (ii) To make handling, transportation and housing easier.
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(9a) Agricultural Extension is the process of educating, advising and assisting farmers to adopt improved agricultural technologies, methods and innovations in order to increase agricultural productivity and improve their standard of living.

(9b)

- (i) Educates farmers on modern farming techniques and improved technologies.
- (ii) Demonstrates improved farming methods through practical field demonstrations.
- (iii) Supplies farmers with information on improved seeds, fertilisers, agrochemicals and other farm inputs.
- (iv) Serves as a link between research institutes and farmers by transferring new agricultural innovations.
- (v) Advises farmers on pest, disease, livestock and farm management practices.
- (vi) Assists farmers in forming cooperative societies and obtaining loans, farm inputs and government assistance.

(9c)

- (i) They help in the distribution of agricultural produce from farmers to consumers.
- (ii) They provide storage facilities, thereby reducing post-harvest losses.
- (iii) They provide market information on prices and demand for farm produce.
- (iv) They save farmers the time and cost involved in marketing their products directly.

(9d)

- (i) Buying and assembling farm produce.
 - (ii) Transportation of agricultural products.
 - (iii) Storage and preservation of produce.
 - (iv) Grading, packaging and standardisation of farm products.
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(10a)

- (i) Personal savings
- (ii) Commercial or agricultural bank loans
- (iii) Cooperative societies

(10b)

- (i) Provides loans and credit facilities to members.
- (ii) Encourages savings among members.
- (iii) Enables members to purchase farm inputs at reduced prices.
- (iv) Assists members in marketing their agricultural produce.
- (v) Promotes joint purchase and ownership of farm machinery and equipment.
- (vi) Improves the economic and social welfare of members through collective efforts.

(10c)

- (i) Inadequate funding and logistics: extension workers often lack the resources and equipment needed to carry out their duties effectively.
- (ii) Poor road and transportation facilities: bad roads make it difficult to reach farmers in remote rural areas.
- (iii) Language and communication barriers: differences in language can make it difficult to pass information across effectively to farmers.

(iv) Low level of education and resistance to new ideas: some farmers find it difficult to understand or accept new methods due to limited education or attachment to tradition.

(10d)

(i) It provides personal contact between the extension agent and the farmer.

(ii) It allows farmers to ask questions and receive immediate feedback.

(iii) It enables the extension agent to identify and solve farmers' specific problems.