CANDIDATE – PLEASE NOTE!

PRINT your name on the line below and return this booklet with your answer sheet. Failure to do so may result in disqualification.

FORM TP 2022047 TEST CODE 01203010

MAY/JUNE 2022

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

AGRICULTURAL SCIENCE

(Single Award)

Paper 01 – General Proficiency

1 hour 15 minutes

01 JUNE 2022 (a.m.)

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This test consists of 60 items. You will have 1 hour and 15 minutes to answer them.

2. In addition to this test booklet, you should have an answer sheet.

3. Each item in this test has four suggested answers lettered (A), (B), (C), (D). Read each item you are about to answer and decide which choice is best.

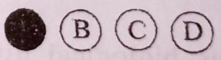
4. On your answer sheet, find the number which corresponds to your item and shade the space having the same letter as the answer you have chosen. Look at the sample item below.

Sample Item

Which of the following animals has the highest dressing percentage?

(A) Chicken
(B) Goat
(C) Cow
(D) Pig

Sample Answer



The best answer to this item is "Chicken", so (A) has been shaded.

5. If you want to change your answer, erase it completely before you fill in your new choice.

6. When you are told to begin, turn the page and work as quickly and as carefully as you can. If you cannot answer an item, go on to the next one. You may return to that item later.

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

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1. A country is said to have food security when it can

(A) feed most of its population
(B) provide a protein-rich diet for everyone
(C) secure food for everyone during periods of natural disasters
(D) provide safe and nutritionally balanced food for everyone at all times

2. Which institution has the following objectives?

I. To facilitate trade between member countries
II. To develop a common trade policy
III. To act as a bargaining body when negotiating with outside forces

(A) Caribbean Development Bank (CDB)
(B) Caribbean Community (CARICOM)
(C) Caribbean Public Health Agency (CARPHA)
(D) Caribbean Research and Development Institute (CARDI)

3. Which of the following is a DISADVANTAGE of organic farming to the consumer?

(A) Maintains biological diversity within the system
(B) Forces producers to respect specific quality criteria
(C) Contributes to mitigating the greenhouse effect and global warming
(D) Lower crop yields in organic farming than for conventional farming

4. Which of the following is the MOST likely reason for the proliferation of praedial larceny in the Caribbean?

(A) The fines are too small.
(B) There are no laws against it.
(C) Vendors do not have to show origin of farm produce.
(D) It is difficult to catch the person committing the act.

5. Which of the following effects is MOST likely associated with crops grown in wet climatic conditions?

(A) Plants are hardier than usual.
(B) Yield per acre is usually higher than normal.
(C) Irrigation is usually a major concern.
(D) Disease and pest outbreaks are usually high.

6. The growing of crops without soil is called

(A) hydroponics
(B) tissue culture
(C) trough culture
(D) organic farming

7. The correct sequence of steps to be followed in growing a crop is

(A) selection of planting material, land preparation, planting, harvesting and cultural practices
(B) selection of planting material, land preparation, planting, cultural practices and harvesting
(C) land preparation, selection of planting material, planting, cultural practices and harvesting
(D) selection of planting material, planting, land preparation, cultural practices and harvesting

Legumes are especially important in organic crop farming because they

(A) are easy to cultivate
(B) promote nitrogen fixation
(C) have a high market demand
(D) are a good source of protein

9. Which of the following measures can be implemented to speed up the breaking down of organic matter in a compost heap?

(A) Gather dead plants and animals faster.
(B) Light a fire on top to create more heat.
(C) Add water to the compost when it is dry.
(D) Allow a long time to pass before applying another layer.

Items 10–12 refer to the following information on Dyson's farming enterprise.

Dyson operates a very progressive farming enterprise. As part of his operations, he offers tours to the public and rent plots of land to nearby schools to do gardening. The information below relates to his financial operation for the period ending 31 December 2020.

Item	$
Receipts from poultry and cattle sales	34,000
Income from farm tours	9,500
Receipts from land rentals	28,900
Rent for farm building	6,800
Rent for farm equipment	1,100
Increase in inventory of supplies	7,000
Hired labor expenses	32,000
Cash operating expenses	900
Machinery depreciation	900

10. From the information above, the total gross farm income for this business is

(A) $31,600
(B) $40,800
(C) $51,459
(D) $72,400

11. The gross margin for Dyson's farming enterprise is

(A) $22,500
(B) $24,600
(C) $37,700
(D) $72,400

12. What is the net farm income realized during this period of operation?

(A) $23,700
(B) $31,600
(C) $37,700
(D) $39,500

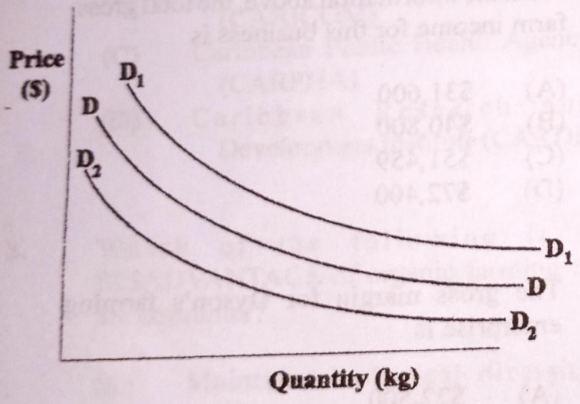
13. Which of the following institutions is NOT a source of credit for a farmer?

(A) Credit union
(B) Commercial bank
(C) Trade organization
(D) Savings and thrift society

14. Which of the following is NOT true of a complete budget?

(A) Provides an estimate of net farm income
(B) Provides an estimate of farm expenditure
(C) Contains only some items of income and expenditure
(D) Can be used to compare profitability of other farm plans

Item 15 refers to the following graph showing demand curves.



15. The curve, $D_2 - D_2$, represents

(A) a decrease in demand
(B) an increase in demand
(C) an elasticity of demand
(D) an inelasticity of demand

16. In economic terms, a surplus exists when

(A) supply of an item is equal to demand
(B) little price elasticity of demand exists
(C) the demand for an item is less than supply
(D) supply is less than the demand for an item

17. Which of the following is a variable cost?

(A) Tax
(B) Fuel
(C) Machinery
(D) Depreciation

18. A farmer intends to expand his poultry farm. Which of the following budgets will he prepare?

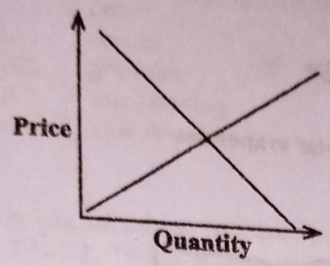
(A) Partial
(B) Complete
(C) Cash flow
(D) Whole farm

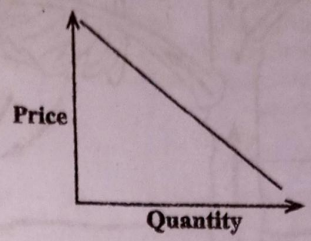
19. Fixed capital describes inputs such as

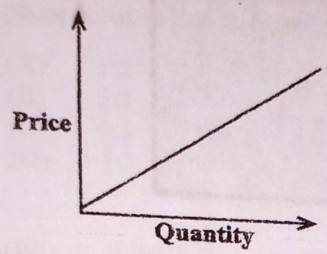
(A) feed, chemicals, cash
(B) tractors, sprayers, seeds
(C) buildings, machines, land
(D) labour, management, tools

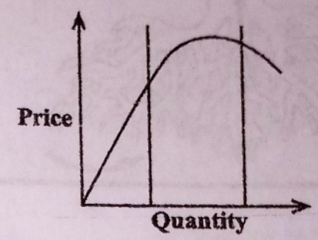
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20. From which of the following graphs can the equilibrium price of a product be determined?

(A)


(B)


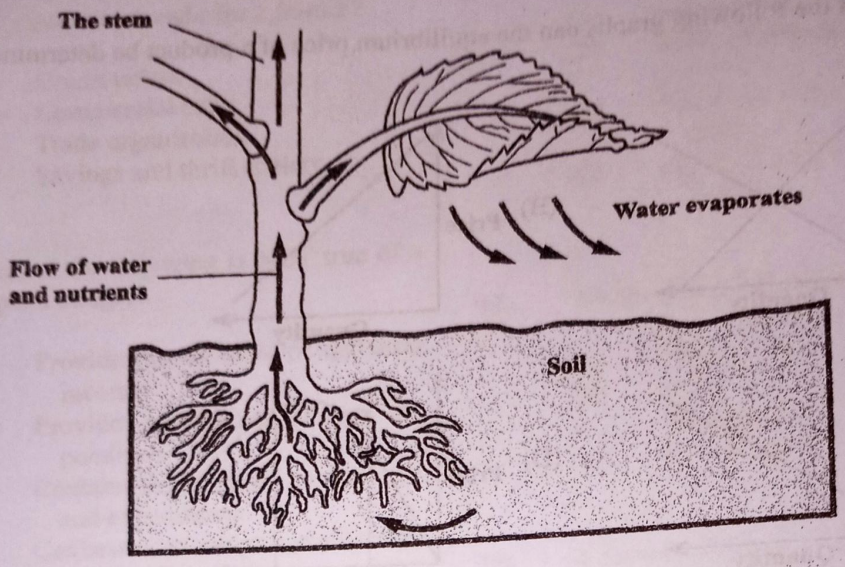
(C)


(D)


21. A soil sample was collected from a school farm and found to be very high in H+ ions. This indicates that this soil MOST likely

(A) is acidic
(B) is neutral
(C) is alkaline
(D) has a high calcium content

Item 22 refers to the following diagram which illustrates the process of transport in plants.



22. Which of the following parts of the plant is responsible for the transport of water and soluble mineral nutrients from the roots to other parts of the plant, as illustrated in the diagram?

(A) Leaf
(B) Root hair
(C) Xylem vessel
(D) Phloem vessel

23. Which of the following is NOT a physical property of soil?

(A) pH
(B) Texture
(C) Structure
(D) Capillarity

24. Farmer Zara observes the premature falling of buds in her tomato crop. Which of the following fertilizers would MOST likely correct this problem?

(A) Urea
(B) Calcium nitrate
(C) Muriate of potash
(D) Sulphate of ammonia

25. Which of the following should be recommended to a farmer cultivating a parcel of land that floods in the rainy season?

I. Construct deep drains.
II. Plant on high beds.
III Plant crops without preparing the land.

(A) I only
(B) I and II only
(C) II and III only
(D) I, II and III

26. The atmospheric gas being utilized in the manufacture of food by plants is

(A) oxygen
(B) nitrogen
(C) hydrogen
(D) carbon dioxide

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27. A mixed fertilizer of Grade 15:35:10 contains 60% plant nutrients. The other 40% of the fertilizer is referred to as

(A) carrier
(B) granules
(C) top dressing
(D) side dressing

28. A bag of mixed fertilizer has a grade of 7:14:21. What is the ratio of nitrogen to phosphorus in this fertilizer?

(A) 1:2
(B) 2:3
(C) 3:1
(D) 3:2

29. Which of the following soil organisms is capable of converting atmospheric nitrogen to nitrates?

(A) Virus
(B) Fungus
(C) Bacterium
(D) Protozoan

30. Which of the following outcomes is MOST likely associated with crops that are grown in an area with high relative humidity?

(A) An increased incidence of fungal diseases
(B) An increase in the rate of transpiration
(C) The drying out of the surface soil
(D) Reduced risk of fungal diseases

31. Which of the following is NOT a benefit of farm mechanization?

(A) Farm operations performed on time
(B) Increased losses in crop handling
(C) Better yield and quality of produce
(D) Improved standard of living for rural farmers

32. Which of the following weed control methods is considered to be biological?

(A) Mulching with organic material
(B) Spraying with a contact weedicide
(C) Application of a systemic herbicide
(D) Introduction of parasites to feed on weeds

33. Which of the following organisms causes root knot in tomatoes?

(A) Virus
(B) Fungus
(C) Nematode
(D) Bacterium

34. An advantage of the use of postharvest technology is that it results in

(A) a reduction in loss due to spoilage
(B) physiological breakdown
(C) compositional changes
(D) physical injury

35. Which of the following practices is MOST important to observe during the operation of a knapsack sprayer?

(A) Wear some protective clothing
(B) Avoid spraying cultivated crops
(C) Avoid eating, drinking and smoking
(D) Spray when there is no wind movement

36. Which of the following pest control methods are combined in the integrated pest management (IPM) approach?

(A) Cultural, biological, medicinal, chemical
(B) Cultural, biological, mechanical, chemical
(C) Conventional, biological, medicinal, chemical
(D) Conventional, biological, mechanical, chemical

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37. The practice of gathering soil around the base of the stem of the plant is called

(A) layering
(B) moulding
(C) mulching
(D) air layering

38. Which of the following is the maturity index for tomato?

(A) Size of the leaves
(B) Onset of flowering
(C) Yellowing of leaves
(D) Change in colour of the fruit

39. The keeping quality of cut Anthurium flowers could be extended by placing them in

(A) tap water
(B) spring water
(C) a salt solution
(D) a sugar solution

40. The technique which can be used to remove the water content of a crop is

(A) drying
(B) freezing
(C) preserving
(D) fermenting

41. The purpose of the crop in the digestive system of a bird is to

(A) store ingested food
(B) absorb digested food
(C) churn and grind food
(D) secrete digestive enzymes

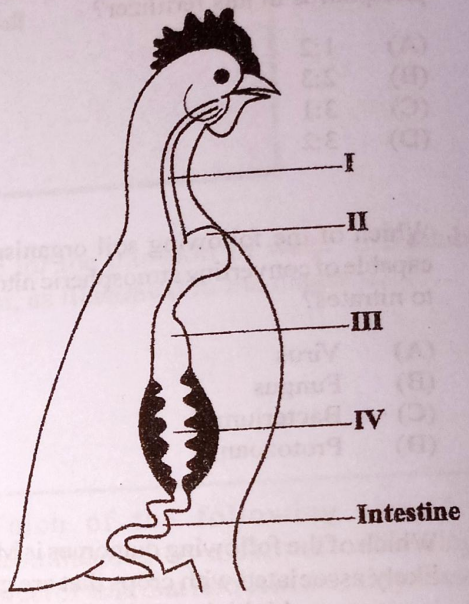
42. In a non-ruminant animal, gastric juice is produced in the

(A) liver
(B) ileum
(C) stomach
(D) duodenum

43. The term 'gestation' can be defined as the

(A) act of giving birth
(B) union of eggs and sperms
(C) release of eggs from ovaries
(D) time period during which pregnancy lasts

Items 44 and 45 refer to the following diagram showing part of the digestive tract of poultry.



44. Which of the parts labelled I, II, III, IV is the proventriculus?

(A) I
(B) II
(C) III
(D) IV

45. The function of the part labelled I is to

(A) store food
(B) grind food
(C) secrete gastric juices
(D) facilitate regurgitation

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46. Broilers are slaughtered at six weeks old. The most suitable ration for a five-week old broiler is

(A) layer
(B) starter
(C) grower
(D) finisher

Items 47 and 48 refer to the following information.

A ram and ewe, both heterozygous for the trait having horns, are mated.

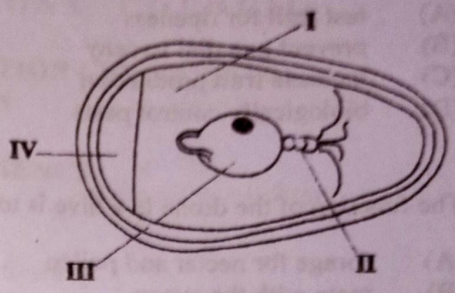
47. If H represents the dominant allele for horns and h represents the recessive allele, the possible genotype of the offspring from the cross is

(A) HH, HH, Hh, hh
(B) HH, HH, hh, hh
(C) HH, Hh, Hh, hh
(D) HH, Hh, hh, hh

48. What are the chances of a hornless offspring being produced?

(A) 25%
(B) 50%
(C) 75%
(D) 100%

Item 49 refers to the following diagram of an egg.



49. Which two parts of the egg are rich in protein?

(A) I and III only
(B) I and IV only
(C) II and III only
(D) II and IV only

50. A rabbit farmer adds double the recommended dosage of antibiotics to the drinking water of his rabbits. He is advised that this practice is wrong MAINLY because it may

(A) endanger the farm workers
(B) endanger the health of consumers
(C) reduce the growth rate of the rabbits
(D) lead to low mortality rates among his rabbits

51. Which of the following demonstrate a good rotational grazing system?

I. Undergrazing is done to conserve fodder.
II. Animals are placed in paddocks for four to six days.
III. Milking animals are grazed first followed by dry and nonproductive cows.

(A) I and II only
(B) I and III only
(C) II and III only
(D) I, II and III

52. Bees are of economic importance to a citrus farmer because they

(A) test fruit for ripeness
(B) prevent praedial larceny
(C) increase fruit production
(D) biologically control pests

53. The function of the drone in a hive is to

(A) forage for nectar and pollen
(B) mate with the queen
(C) protect the hive
(D) produce honey

54. A livestock farmer uses the formula

$$\frac{\text{Total kg of feed eaten}}{\text{Total kg of live weight gain}} \times 100$$

to calculate

(A) LCR
(B) FCR
(C) GAP
(D) GMP

55. Which of the following organisms is the causative agent of Avian influenza?

(A) Virus
(B) Protozoan
(C) Bacterium
(D) Mycoplasma

56. Which of the following practices is optional in broiler production but compulsory in layer production?

(A) Culling
(B) Brooding
(C) Debeaking
(D) Deworming

57. Good brooding practices result in

I. better development of chicks
II. faster weight gains
III. increased egg production

(A) I only
(B) I and II only
(C) II and III only
(D) I, II and III

58. The MOST common symptom of coccidiosis is

(A) loss of appetite
(B) bloody diarrhoea
(C) difficulty breathing
(D) green watery faeces

59. A likely DISADVANTAGE of artificial insemination in cows is

(A) less disease transmission
(B) less technical skills required
(C) cross breeding of local stock
(D) more technical skills required

60. A maintenance ration is one that has the nutrients needed

(A) for the animal to increase in weight
(B) to allow for some activities to go on
(C) to keep the animal in a producing mode
(D) to keep the animal alive in its initial condition

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.