CANDIDATE – PLEASE NOTE!

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

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TEST CODE **01203010**

MAY/JUNE 2016

FORM TP 2016042

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

AGRICULTURAL SCIENCE

(Single Award)

Paper 01 – General Proficiency

1 hour 15 minutes

06 MAY 2016 (a.m.)

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

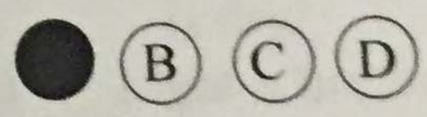
1. This test consists of 60 items. You will have 1 hour and 15 minutes to answer them.
2. In addition to this test booklet, you should have an answer sheet.
3. Each item in this test has four suggested answers lettered (A), (B), (C), (D). Read each item you are about to answer and decide which choice 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) Pig
(C) Goat
(D) Cow

Sample Answer



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

5. If you want to change your answer, be sure to 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. An agronomist is a person who specializes in the study of the

(A) growth and management of crops
(B) growth of ornamental plants
(C) control and use of insects
(D) management of animals

3. Which of the following can be considered roles of agriculture in the economy of Caribbean territories?

I. Contributing to the GDP
II. Reducing the regional food import bill
III. Securing foreign exchange

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

4. Praedial larceny is considered an "Every day problem" because

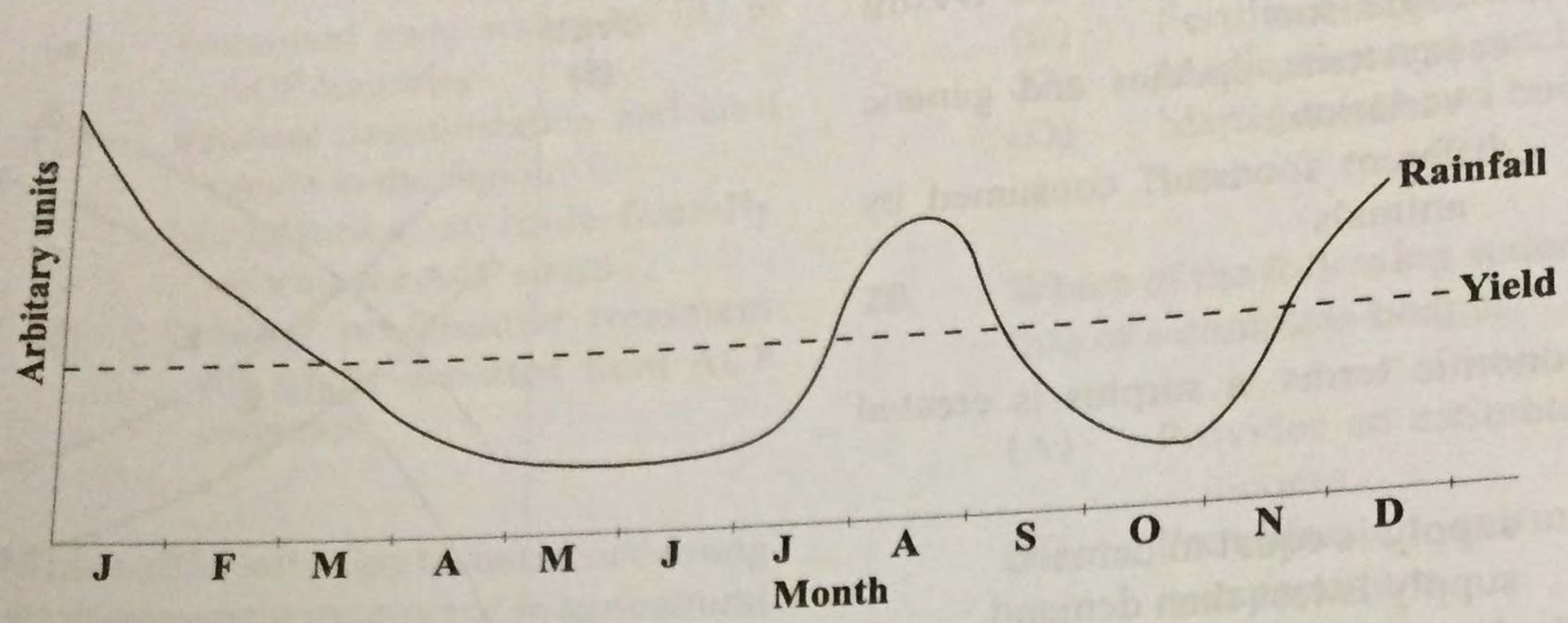
(A) individuals are arrested daily for stealing agricultural produce
(B) police response is usually not fast on a daily basis
(C) farmers all around face this problem on a daily basis
(D) fines are issued on a daily basis to individuals caught stealing

5. A bio-terrorism attack on agriculture may result in

I. an increase in food prices
II. destruction of ecological habitats
III. destabilization of a system of food security

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

Item 6 refers to the following graph which shows the relationship between rainfall and yield of tomato during 2012.



6. The yield of tomato is steady because the crop is MOST likely

I. produced in an undercover system
II. grown intensively in the field
III. grown on a sandy soil which is well fertilized

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

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7. The correct procedure to be followed in Hazard Analysis Critical Point (HACCP) in a milking system is

I. Washing the cow's udder
II. Washing and disinfecting the system
III. Cleaning the teat cups betweeen milking

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

8. Which of the following can be done to speed up the breaking down of compost?

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

9. Legumes are especially important on organic crop farms because they

(A) are easy to cultivate
(B) provide a good cover
(C) promote nitrogen fixation
(D) have a high market demand

10. Biodiversity refers to

(A) the changing of habitats by animals
(B) biological control of living organisms
(C) ecosystems, species and genetic variation
(D) different foodstuff consumed by animals

11. In economic terms, a surplus is created when

(A) supply is equal to demand
(B) supply is less than demand
(C) demand is greater than supply
(D) supply is greater than demand

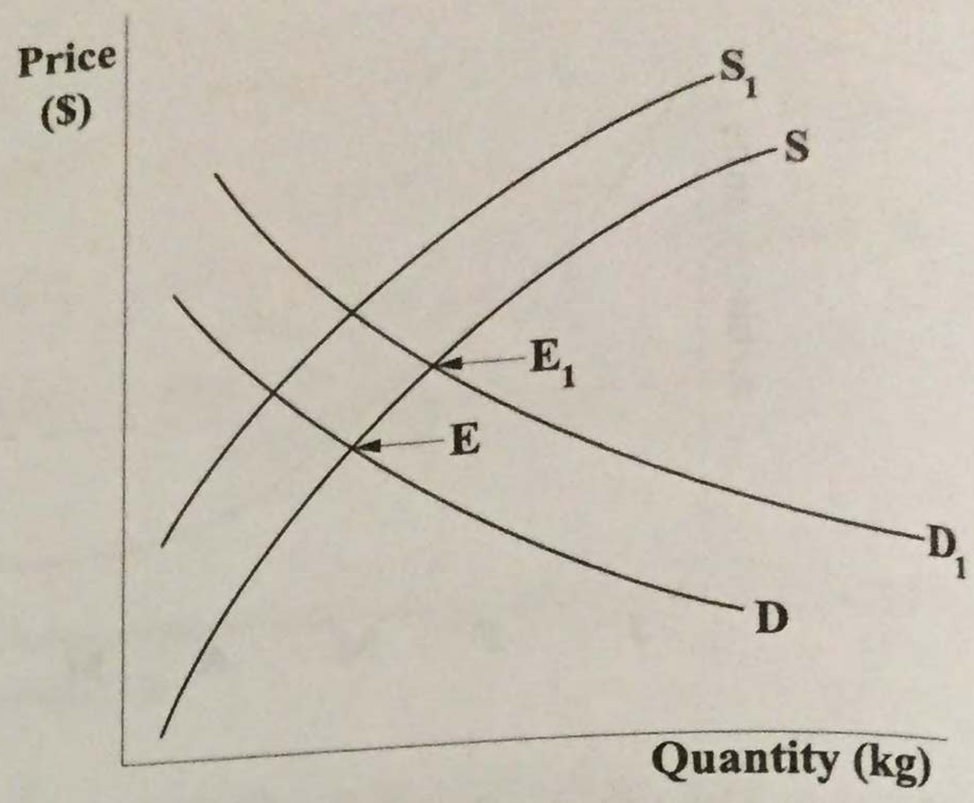
12. Which of the following is classified as working capital?

(A) Paying rent for farm buildings
(B) Purchasing farm inputs for vegetable production
(C) Replacing farm buildings
(D) Purchasing a tractor

13. Which of the following is NOT a fixed cost?

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

Items **14–15** refer to the following graph of a demand and supply curve.



14. Which of the following would MOST likely lead to a shift from S to S_1?

I. Lack of marketing information
II. A greater demand for the product
III. More mechanization on the farm
IV. Tax breaks on the cost of inputs

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

15. During Lent, people demand more fish than any other meat. This is represented by a shift from

(A) D_1 to D
(B) D to D_1
(C) S_1 to S
(D) E_1 to E

GO ON TO THE NEXT PAGE

16. How did the cessation (ending) of the Lome Convention affect the Caribbean?

(A) Unlimited trade access by EU to ACP countries
(B) Political destabilization and civil unrest in the region
(C) Introduction of trade-friendly reforms for ACP states
(D) Loss of preferential treatment for goods imported from ACP countries

17. Which of the following features concerning the management structure of an agricultural cooperative are correct?

I. Officers are elected every two years.
II. It is managed by an elected committee.
III. All farmers of good character can join.

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

Item **18** refers to the following information.

The yield and average price per kilogram of four crops are given in the table below.

Crop	Yield (Thousand kg)	Price (dollar per kg)
Cabbage	27	2.00
Cauliflower	17	3.50
Lettuce	27	1.25
Tomato	22	2.50

18. Based on gross returns only, which is the MOST profitable crop for a farmer to plant?

(A) Cauliflower
(B) Cabbage
(C) Lettuce
(D) Tomato

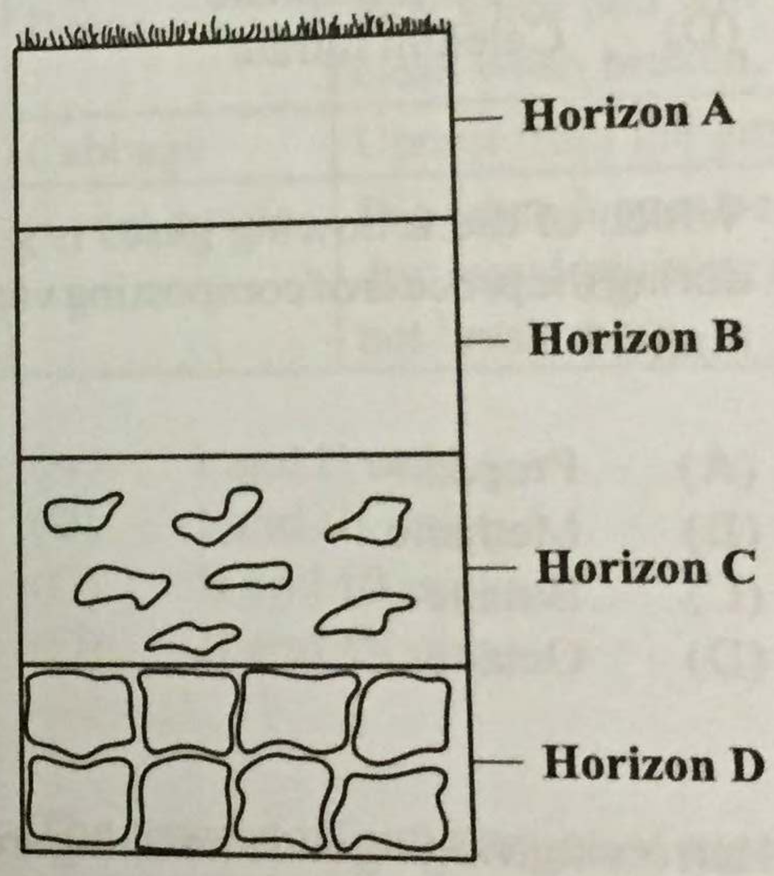
19. Which of the following pairs of inputs of production comprises variable costs?

(A) Seeds and medication
(B) Fertilizers and buildings
(C) Medication and machinery
(D) Management and buildings

20. Which of the following statements 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 **21** refers to the following diagram of a soil profile.



21. Which horizon determines the chemical composition of the soil formed?

(A) Horizon A
(B) Horizon B
(C) Horizon C
(D) Horizon D

22. Which of the following soil organisms are capable of converting atmospheric nitrogen to nitrates?

(A) Fungi
(B) Viruses
(C) Bacteria
(D) Protozoa

23. An orange tree, exhibiting premature falling of flower buds, is MOST likely deficient in

(A) sulphur
(B) nitrogen
(C) potassium
(D) phosphorus

24. Excessive use of which of the following fertilizers will result in soil acidity?

(A) Triple super phosphate
(B) Ammonium sulphate
(C) Super phosphate
(D) Calcium nitrate

25. Which of the following gases is given off during the process of composting vegetative matter?

(A) Propane
(B) Methane
(C) Butane
(D) Octane

26. Harrowing, ridging and rotavating are BEST described as

(A) zero tillage
(B) tertiary tillage
(C) primary tillage
(D) secondary tillage

27. Which of the following is MOST likely to occur when crops 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

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

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

29. Which of the following BEST describes the structure of a rhizome?

(A) A swollen underground stem
(B) An underground shoot with various roots
(C) A thick fleshy underground stem that runs horizontally
(D) An underground shoot with overlapping leaf bases concentrically arranged

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

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

GO ON TO THE NEXT PAGE

32. Seeds result from

(A) mature ovules
(B) fertilized ovary
(C) fertilized ovules
(D) rupturing of fruit walls

33. A DISADVANTAGE of sexual reproduction is that the offspring

(A) may inherit undesirable qualities from their parents
(B) may look different from their parents
(C) may adapt to their environment
(D) that survive are superior

34. The BEST time of the day to transplant seedlings is

(A) late morning
(B) late afternoon
(C) early morning
(D) early afternoon

35. Which of the following is NOT a benefit of mulching?

(A) Encourages weeds to grow
(B) Reduces the chance of soil erosion
(C) Prevents loss of water by evaporation
(D) Keeps the soil damp and permeable to water

36. Which of the following methods can be referred to as a biological means of pest control?

(A) Using wasps to control mealy bugs
(B) Application of insecticides
(C) Removal of crop residues
(D) Setting of insect traps

37. The MOST water conserving system of irrigating crops in the Caribbean is

(A) sub-surface
(B) sprinkler
(C) flood
(D) drip

38. Which of the following instructions for harvesting are appropriate?

I.	Tomatoes	Pick when fruits are dark green in colour.
II.	Beans	Pick when pod will snap clean when broken.
III.	Cabbage	Uproot from the ground.
IV.	Sweet potato	Dig when leaves begin to dry, avoid bruising and do not break roots.

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

39. The process of fermentation of sugars results in the

(A) oxidation of the product
(B) destruction of the product
(C) release of CO_2 into the atmosphere
(D) removal of CO_2 from the atmosphere

GO ON TO THE NEXT PAGE

40. The environmental conditions necessary for broiler production are BEST described as

(A) humidity, ventilation and temperature
(B) good ventilation, aeration and low humidity
(C) level of toxic gases in the air, temperature and oxygen
(D) temperature, humidity and low level of toxic gases in the air

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

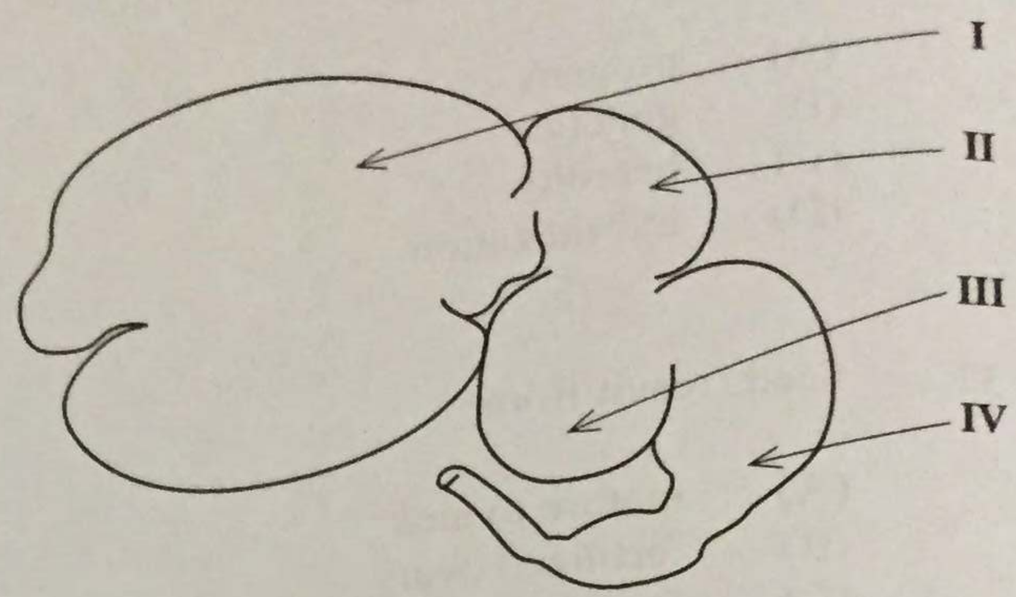
42. In rabbits, most cellulose digestion takes place in the

(A) rectum
(B) caecum
(C) stomach
(D) oesophagus

43. The function of pebbles in the gizzard of poultry is to

(A) crush and grind food particles
(B) prevent food particles from digesting
(C) move food particles from one section to another
(D) act as a sieve to allow liquid foods to be absorbed

Item 44 refers to the following diagram of a ruminant stomach.



44. The part labelled IV is the

(A) rumen
(B) omasum
(C) reticulum
(D) abomasum

45. A balanced ration consists of

(A) the best available nutrients for production
(B) nutrients in the correct proportions
(C) food materials to prevent deficiency
(D) all the essential nutrients for healthy growth

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

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

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

GO ON TO THE NEXT PAGE

47. When siting an apiary it should be positioned

(A) downwind of any building
(B) well away from any building
(C) on the leeward side of any building
(D) on the windward side of any building

Item 48 refers to the following information.

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

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

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

49. Which stage of growth is MOST appropriate for feeding layers with laying ration?

(A) Less than one month
(B) Two to three months
(C) Three to four months
(D) Five months and over

50. Which of the following is NOT true about oestrous synchronization?

(A) The cows conceive earlier in the breeding period.
(B) More labour is required for detecting when cows are in heat.
(C) It is less cost-effective than the expression of natural heat.
(D) It improves the reproduction performance of the animals.

51. A likely DISADVANATAGE of artificial insemination (AI) in cows is

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

52. Which of the following diseases are MOST likely prevented by reducing the moisture content of the litter and the stocking density of the birds in a poultry pen?

(A) Aspergillosis
(B) Neweastle
(C) Fowl pox
(D) Roup

53. Which of the following is a sign of heat in rabbits?

(A) Restlessness and nervousness
(B) Excessive noise making
(C) Swelling of the vulva
(D) Acceptance of the buck

54. 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

55. Young chicks are usually provided with a heat source during brooding in order to

(A) provide light for eggshell development
(B) maintain the body temperature of the birds
(C) increase the temperature of litter to dry the watery faeces
(D) prevent caking of the concentrate feed thrown on the floor

GO ON TO THE NEXT PAGE

56. Debeaking layer birds is done to

(A) prevent stress
(B) prevent starvation
(C) reduce cannibalism
(D) reduce overcrowding

57. Which of the following is used by bees to make honey?

(A) Pollen
(B) Nectar
(C) Bee bread
(D) Royal jelly

58. Which of the following processes is used to kill harmful bacteria in milk?

(A) Separation
(B) Clarification
(C) Pasteurization
(D) Homogenization

59. Which of the following activities BEST describes the grading process of eggs?

(A) The removal of good eggs from bad eggs
(B) The collection of eggs from nesting boxes
(C) The separation of eggs according to shape and size
(D) The use of various mechanisms to enhance the appearance of eggs

60. The live weight of a goat is 50 kg. The dressed carcass weight is 30 kg. What is the dressing percentage?

(A) 30
(B) 40
(C) 50
(D) 60

END OF TEST

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