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P515/1
Principles and Practices
of Agriculture
July/August 2019
2 Hours

EXTERNAL MOCK EXAMINATIONS 2019
Uganda Advanced Certificate of Education
PRINCIPLES AND PRACTICES OF AGRICULTURE
Paper 1
2 Hours 30 Minutes

Instructions to candidates:
- Answer**ALL** questions in this paper.
- For section A, write the letter corresponding to the best alternative in the box provided at the right-hand side.
- For section B, answers should be written in the spaces provided.

SECTION A (30 MARKS)

1. During the mixing of livestock feeds, the ingredient: Soya bean MUST be roasted before being incorporated. The reason for this is to
   A. improve the palatability of the feed.
   B. enable easy grinding.
   C. economise the proportion of the soyabean used.
   D. destroy the toxin (soyin)

2. The following crop pests transmit viral pathogens EXCEPT
   A. Tobacco whitefly   C. leaf hoppers
   B. Groundnut aphids   D. cotton stainers

3. Which of the following livestock diseases is a protozoan disease?
   A. Infectious bursal disease (Gumboro) in poultry.
   B. African swine fever in pigs.
   C. Crazy chick disease in poultry.
   D. East coast fever in cattle.

4. Which of the fertilizers below has the highest proportion of nitrogen (N)?
   A. $(NH_2)_2\ CO$ - Urea
   B. NH_4NO_3 – Ammonium nitrate
   C. $(NH_4)_2SO_4$ – Sulphate of ammonia
   D. $(NH_4)_2HPO_4$ – Diammonium phosphate

5. One of the following is NOT a benefit of draining water logged soils.
   A. Reducing soil acidity
   B. Neutralising the soil acidity.
   C. Increasing soil microbial activity.
   D. Enabling better respiration in the tissues.

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6. A feed weighing 800g was provided to an animal. The feed had the following proportions of nutrients (with their corresponding digestibilities):

   Nutrient (in g)   Digestibility (%)
   Carbohydrates 500   60
   Fats   100   80
   Proteins   200   70
   Calculate the total digestible nutrients (TDN) as a percentage of the whole feed.
   A. 70   B. 65   C.77.5   D. 80

7. The following are benefits of liming fish ponds EXCEPT
   A. Modifying pH of the pond waters.
   B. Killing some bacteria in the pond
   C. Improving the microbial activity in the pond.
   D. Increasing the acidity of the pond.

8. Which of the following sources of energy is non-renewable?
   A. Solar   B. wind   C. Biogas   D. fossil fuels

9. A cargo of mass 0.5 tonne is lifted through a vertical height of 2m. Determine the potential energy attained by the cargo.
   A. 10J   B. 2500J   C. 10.000J   D. 100J

10. Most of the water fed upon by the ruminant animal is absorbed in the
    A. colon   B. omasum   C. Reticulum   D. rumen

11. While swimming, the fish balances in the pond waters by the aid of
    A. Pectoral fins   B. caudal fin   C. dorsal fin   D. lateral line

12. Which of the following is NOT a role of crop research institutes in Agricultural production?
    A. Breeding disease-resistant varieties.
    B. Marketing of farmers' produce
    C. Educating the farmers.
    D. Coordinating with extension workers.

13. When the price of an agricultural product is 100/= per unit, the quantity bought is 12 units. When the price increases to 1500/- per unit, the quantity bought falls to 9 units. Calculate the price elasticity of demand for the commodity.
    A. 2   B. 0.5   C. 1   D. 0.75

14. Which of the following is NOT a characteristic of a leguminous agroforestry tree?
    A. Fibrous root system   C. Tap root system
    B. Possession of root nodules   D. Profuse branching

15. The application of methylated spirit in the production of mushrooms may be for
    A. Encouraging rooting
    B. Killing pathogenic organisms.
    C. Providing growth hormones.
    D. Regulating the pH from alkaline to acidic.

16. Nutrient synergism means that presence of a nutrient
    A. promotes the presence and utilisation of another nutrient.
    B. Inhibits the presence and utilisation of another nutrient.
    C. Increases acidity of the soil.
    D. Increases alkalinity of the soil.

17. Which of the following insect pests attacking cultivated crops is NOT a defoliator?
    A. The sweet potato weevil   C. The orange dog
    B. The African army worm   D. The diamond back moth

18. In the processing of crystalline sugar from sugarcanes, lime is added during
    the clarification stage in order to
    A. remove impurities which inhibits the formation of the crystals.
    B. Increase the volume of juice.
    C. Drive off the excezs water.
    D. Facilitate the formation of molasses.

19. Stainless steel is an alloy of
    A. Iron and carbon   C. Iron, chromium and nickel
    B. Iron and manganese   D. Iron and tungsten

20. Which of the following are the recessive traits in garden peas
    A. green seeds, yellow pods   C. Round seeds, purple flowers
    B. Yesllow seeds, green pods   D. Green pods, white flowers.

21. In chicken, there is also complementary interaction of genes. The allele R produces
    a rose comb. Another allele P (on different chromosome) produces a pea comb.
    When R and P both present, they combine to produce a walnutcomb. The absence
    of R and P alleles produces a single comb. Therefore chicken with genotypes RrPP,
    RRpp and rrpp will, respectively be
    A. pea, walnut, rose combs   C. single, pea, rose combs
    B. walnut, rose, single combs   D. rose, pea, single combs

22. The enzyme in yeast that catalyses the conversion of glucose to ethanol and carbon
    dioxide is
    A. sucrose   B. diastase   C. zymase   D. maltase

23. Which one of the following is NOT an agro-based industry?
    A. Milk-processing plant   C. Fertilizer-manufacturing plant
    B. Fruit-processing plant   D. Maize milling machinery

24. Which of the factors below is considered as an output in the the production
    function?
    A. skilled labour force   C. milk yield from the animals.
    B. feeds provided to the animals.   D. fertilizers applied in the garden.

25. Alleloparthy refers to some plants producing
    A. hormones that promote growth.
    B. flowers that are wind-pollinated.
    C. chemicals that prevent other plants from growing around them.
    D. fruits without out fertilisation.

26. An agrochemical is supposed to be diluted with water before spraying; in the ratio 3 : 40 respectively. If the solution to be made measures 5000 litres, then the proportions would be
   A. 375*l* of chemical + 5000*l* of water.
   B. 3*l* of chemical + 4997*l* of water.
   C. 349*l* of chemical + 4651*l* of water.
   D. 375*l* of chemical + 4625*l* of water.

27. A fertiliser is labelled NPK, 20 : 10 : 15, meaning the nutrient composition is 45% The remaining 55% is referred to as
   A. active ingredient   C. toxic material
   B. inert ingredient   D. liming material

28. When partially dried grains are stored, they become toxic. The toxicity is due to the development of micro organisms known as
   A. staphylococcus   B. aflatoxins   C. salmonella   D. escherichia

29. Zoonotic diseases are transmitted from animals to humans through consuming contaminated animal products. Examples of such diseases include
   A. East coast fever   C. Foot and mouth disease
   B. Coccidiosis   D. brucellosis

30. The yolk of chicken is fertilized in the
   A. Uterus   B. isthmus   C. magnum   D. infundibulum

SECTION B (70 Marks)

31. (a) State why concrete is a good building material. (5 mks)

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   (b) Explain factors that affect the strength of a material.   (5 mks)

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32. (a) State the differences between ruminants and non-ruminants regarding the following; (5mks)

	Ruminants	Non-ruminants
Saliva		
Digestion in the stomach		
Absorption of water		
Source of body energy		
Absorption of food		

(b) State the factors that affect the digestibility of feeds in animals. (5mks)

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33. (a) State the hardy-Weinberg principle of population genetics.   (1 mk)

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   (b) The principle above is represented mathematically as $p^2 + 2pq + q^2 = 1$
       where

      p represents: ....

      q represents: ....

      (c) State five conditions under which the hardy-weinberg principle can be fulfilled.

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(d) If a dominant allele T has a frequency of 0.7 (i.e. found in 70% of the genes), then the
    recessive allele t has a frequency of $1.0 - 0.7 = 0.3$. Buy use of a punnet square,
    determine the expected frequency of the three possible genotypes TT, Tt and tt. (2 mks)

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34. (a) State any five qualities that are desired in a variety of a crop seed.   (5 mks)

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(b) State four methods of protecting crop seeds against insect damage.   (4 mks)

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(c) State the meaning of the term "certified seed."   (1 mk)

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35. (a) Explain the meaning of the following as applied in crop production. (5mks)

(i)   Biological pest control ....

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(ii) Translocated herbicides ....

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(iii) Polyphagous pest ....

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(iv) Residual pesticide...

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(v)   Legislative pest control ....

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(b) State the avenues through which crop diseases are transmitted.   (5mks)

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36. Explain the meaning of the following as used to describe the pesticides.   (10mks)
   a) mode of action.

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   b) pre-harvest period

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   c) active ingredient

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   d) pesticide formulation

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   e) range of ability

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37. (a) Explain why water in a fish pond should be flowing in and out.   (2mks)

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   (b) State the importance of adequate light in a fish pond.   (2mks)

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   (c) What is eutrophication in fish ponds?   (2mks)

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   (d) State the dangers of eutrophication in fish pond.   (4mks)

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E   N   D