



*Dr. Blosa Science*

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Senior one to senior six  
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## UACE P515/1 Principles and practices of agriculture 2018

### SECTION A (30 MARKS)

Write the letter corresponding to the correct answer

- Which one of the following is the reason for leaving some honey in the hive when harvesting? To
  - Allow bee eggs to hatch
  - Stimulate bees to collect more honey
  - Prevent bees from starving
  - Prevent bees from swarming
- Keeping inventory records on a farm can enable a farmer to
  - Evaluate the financial stand of the farm
  - Establish the value of liabilities on the farm
  - Identify the source of asset on the farm
  - Establish the value of assets on the farm
- Which one of the following determines the spacing of posts when fencing land for rearing livestock?
  - Cost of the post
  - Type of animal
  - Type of soil
  - Availability of the post
- Which one of the following is the reason why regular turning of material during composting is recommended?
  - Allow even distribution of nutrients
  - Prevents loss of nutrients through seepage
  - Allow uniform decomposition of compost materials
  - Allow adequate wetting for proper decomposition
- To ensure that the best male individual is selected in a livestock improvement programs, selection should be done
  - Only on animals that show good traits
  - Within a group of animals of similar ages raised under similar conditions
  - Based on records of the relatives of the animals
  - Based on the performance record records of the offspring of the animal
- The right stage for harvesting a mushroom is when the cap

- A. is flat
  - B. is curved
  - C. is curved downward
  - D. has shed its spores
7. Women tend to dominate urban cultivation because they
- A. are marginalized in other forms of employment
  - B. adapt much more easily to urban cultivation conditions
  - C. are skilled than men in small scale cultivation
  - D. make up a bigger proportion of the urban population
8. Biological activities in the soil may cause soil acidity through
- A. microbes secreting acids into the soil
  - B. anaerobic decomposition of organic matter
  - C. plant roots secreting acids into the soil
  - D. their interaction with fertilizers
9. A continuous supply of oxygen in a fish pond can be maintained by
- A. removing waterweeds from the pond
  - B. pumping air into the pond
  - C. refilling of the pond with fresh water regularly
  - D. planting grass on the pond walls
10. Which one of the following is the most important factor to consider when sitting an apiary?
- A. Nearness to flowering plants
  - B. Provision of shade
  - C. Nearness to homestead
  - D. Nearness to market
11. An example of a farm tool which belongs to a second class lever is a
- A. Wheel barrow
  - B. Claw hammer
  - C. Surgical knife
  - D. Pair of plier
12. The main reason for including blood meal in poultry feeds is to provide
- A. Fats and oils
  - B. Minerals and proteins
  - C. Carbohydrates
  - D. Vitamins and sugar
13. Which one of the following describes buffer stocks in the marketing of agricultural products?
- A. Products kept in store and only released during shortage
  - B. Products imported into the country during periods of emergency
  - C. Products kept in store waiting to be processed into finished grade
  - D. Products kept in store awaiting exportation
14. Bloat in cattle can be prevented by
- A. Maintain high standards of hygiene
  - B. Feeding cattle on hay during the rainy season

- C. Providing cattle with foods rich in calcium
  - D. Administering antibiotic to cattle
15. Which one of the following is considered as uncertainty in farming?
- A. Change in weather
  - B. Theft of agricultural products
  - C. Changes in government policies
  - D. Disease outbreak
16. Which one of the following is true of  $F_1$  generation, when two parents of different homozygous conditions for the same trait are crossed?
- A. They will all be homozygous for the trait
  - B. The ratio of heterozygous to homozygous condition will be 3:1
  - C. They will be heterozygous for the condition
  - D. Half will be homozygous and half heterozygous
17. Which one of the following is true of the behaviors of Auxins during phototropism? They are
- A. activated on the illuminated side of the shoot
  - B. distributed to the dark side of the shoot
  - C. destroyed on the lit side of the shoot
  - D. moved to the illuminated side of the shoot.
18. Translocated herbicides differ from contact herbicides in that they
- A. Kill only weeds that have emerged
  - B. Require proper wetting of leaves
  - C. Kill only the shoot system of the perennials
  - D. Require low volume sprays
19. The type of loan extended to farmers to carry out fencing of land and buy machinery is an example of
- A. Seasonal loan
  - B. Long term loan
  - C. Short term loan
  - D. Intermediate term loan
20. Which one of the following has the least effect on urban farming
- A. The quality of available water
  - B. The potential for irrigation
  - C. Lend tenure conditions
  - D. The structure of urban population
21. Which one of the following promotes a high yield of honey in a bee colony?
- A. Maximum size of bee hive
  - B. Drone population being greater than that of worker bee
  - C. Protecting the hive from extreme weather conditions
  - D. Harvesting honey more frequently
22. Which one of the following is the correct procedure to be followed in slaughtering an animal?
- A. Starving → stunning → slaughtering → hoisting
  - B. Stunning → hoisting → slaughtering → starving

- C. Starving → hoisting → slaughtering → stunning
  - D. Stunning →starving → slaughtering → hoisting
23. Which one of the following is an advantage of cage culture system?
- A. Fish mature faster
  - B. High fishing stocking densities are achieved
  - C. The fish attracts a high market prices
  - D. Low amounts of high quality feeds are required
24. Which one of the following may lead to an increase in the population of earthworms in the soil?
- A. Draining the soil
  - B. Application of artificial fertilizer
  - C. Cultivation to loosen the soil
  - D. Application of organic manure
25. The price of perishable agriculture products can be stabilized by
- A. Production of the amount demanded
  - B. Increasing the amount of products
  - C. Processing the produce
  - D. Introducing a buffer stock
26. A fish pond containing zooplanktons, small fish, big fish and fish eagle was polluted with a pesticide. Which of the following had the highest amount of pesticide in the tissue?
- A. Zooplankton
  - B. Small fish
  - C. Big fish
  - D. Fish eagle
27. Which one of the following is **not** a required feature in a calf house?
- A. Hard, easy to clean floor.
  - B. High walls
  - C. Adequate ventilation
  - D. Spacious and drought free house
28. Which one of the following explains why milk is highly perishable?
- A. Has high water content
  - B. Has high carbohydrate content
  - C. Has an ideal composition of nutrients for microbial growth
  - D. Contains fats which go rancid
29. A nutrient is essential for plant growth and development if
- A. it is required by the plant at the critical stage of growth
  - B. its presence in the plant does not cause a growth abnormality
  - C. its deficiency results into a growth deformity
  - D. it is easily absorbed by the plant
30. thawing of semen after refrigeration before use is essential to
- A. activate the sperm
  - B. prolong the life of sperm
  - C. dilute the semen

D. ease the insemination process

### SECTION B

Answer all questions

31. (a) Give the meaning of

- (i) Land registration (01mark)
- (ii) Land adjudication (01mark)

(b) State the features of land title deed (02marks)

(c) Explain the benefits of

- (i) land registration (03marks)
- (ii) land adjudication

32. A dairy farmer has a piece of land measuring 500m by 500m and would like to erect a four barbed wire fence around it with a gate 5m wide. If the spacing between the posts is 5 m and each roll of barbed wire is 600m.

(a) Calculate the

- (i) Perimeter of land (01mark)
- (ii) Number of fencing posts required (01Mark)
- (iii) Number of staples (U-nail) required(01mark)
- (iv) Number of rolls of barbed wire (01mark)

(b) Quality of good farm gate (06marks)

33. (a) Describe each of the following machines used on a farm.

- (i) Lever
- (ii) Inclined plane
- (iii) Pulley

(b) Give an example of how each of the machine in (a) can be used on a farm

- (i) Lever
- (ii) Inclined plane
- (iii) Pulley

34. (a) What is a hormone

(b) State two roles of follicle stimulating hormone in the reproductive cycle of a cow.

(c) Give three effects of hormone in milk production

**(d) Explain the causes of milk hold-up**

35. (a) Explain four factors to consider when sitting an apiary

(b) State four methods that can be used to encourage bees to colonize a hive

36. Figure 1 shows relative rates of water rise in three soil samples

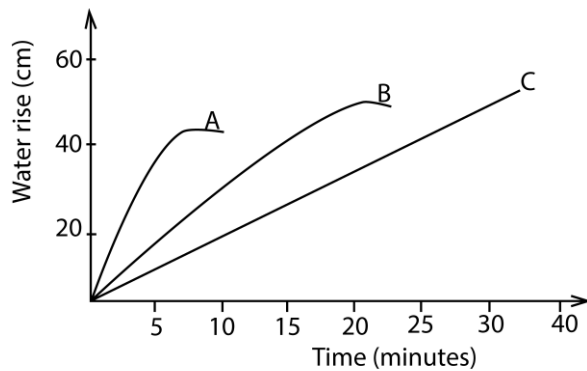


Fig. 1

- (a) Describe the trend in the three soil samples (03marks)
- (b) Suggest the identity of soil samples A and C giving a reason in each case (02mark)
  - A
  - C
- (c) Give three ways in which the information portrayed by the graph is useful to a farmer. (03marks)
- (d) Name the forces that are responsible for holding water in the soil pore (02marks)

37. (a) Give four effects of feeding animals on feeds lacking calcium

b) State three observable symptoms of each of following nutritional disease

(i) Milk fever

(ii) bot

## Suggest answers

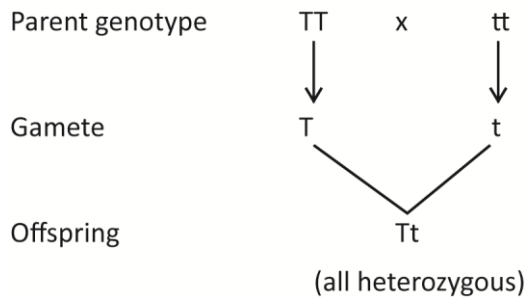
1C    4C    7A    10A    13A    16C    19B    22A    25C    28C

2D    5D    8D    11A    14B    17B    20C    23B    26D    29A

3B    6A    9C    12B    15C    18D    21A    24D    27B

## Comments

16.                    T - for dominant character  
                          t - recessive character



18. **Translocated herbicides** move to the site of action via the transport mechanisms within the plant; the xylem and phloem. Thus, may need big volume/wetting every leaf

19. Fencing of land and buy machinery is an investment

20. Urban farming deals annual crops not so limited by land tenure system

22. Starving is necessary because

- Loss of gut fill on the farm results in a reduction in the volume of gut fill that must be removed from the slaughter facility.
- feed withdrawal leads to increased ease of evisceration and reduces the incidence of intestinal tract rupture during evisceration
- Starving /Fasting pigs before slaughter reduces mortality during transport to the abattoir.

Evisceration is the process of removing the internal organs of an animal during slaughtering.

Stunning ensures a humane end with no pain. Stunning also results in decreased stress of the animal and superior meat quality.

The three most common methods of stunning are mechanical, electrical, and carbon dioxide (CO<sub>2</sub>) gas. The end result of each method is to render the animal unconscious. Mechanical stunning involves firing a bolt through the skull of the animal using a pneumatic device or pistol. Electrical stunning passes a current of electricity through the brain of the animal. CO<sub>2</sub> stunning exposes the animal to a mixture of CO<sub>2</sub> gas, which acts as an anesthetic.

Hoisting mean to raise (something) by means of ropes and pulleys: The cattle hoist is mainly used to lift the cattle that have been turned down from cattle killing box to the upper rail for assassination and bloodletting.

26. Pesticide accumulates along the food chain leading to high concentration in an animal at the highest trophic level.

31. ) Give the meaning of

(iii) Land registration (01mark)

This is the official recording of land ownership details by land registrar into the national database in order to get legal land ownership documents or title deeds.

(iv) Land adjudication (01mark)

This is the process of final and authoritative determination of the existing right and claims of people to land and subsequent issuance of the legal ownership document or title deed by the registrar.

(b) State the features of land title deed (02marks)

- District and county where the land is located
- Block and plot number of the land
- Size of land in hectares
- Registrar of land tittle signature
- Sketch of shape of land
- Occupants Name and address
- The title instrument number
- Date of issuance of the title deed
- Stamp seal mark of the land office
- Chronology of transfer from the first owner to the current occupant

(c) Explain the benefits of

(iii) land registration (03marks)

- The land owner has security of tenure hence can develop the land.
- He can use the land title to obtain loans.
- Land owner can easily rent out land to get extra income.
- It minimizes land disputes because of proper land demarcation
- It encourages land development through establishment of perennial crops
- Land owner is encouraged to carryout soil conservation measures in order to protect his land.
- It is easy to sale or transfer the ownership of land.

(iv) land adjudication

- It settles land disputes since it's the final and authoritative way of determining the existing claims of people to land.

- It aids surveying and takes measurements, description and recording of land details used in land registration.
- It facilitates registration, transfer of interest and allocation of land in areas where land is not owned by any authority or person.
- It helps in compilation and maintenance of a list of rates of compensation payable in respect of crops, buildings of a non-permanent nature and any other thing that may be prescribed.

32. A dairy farmer has a piece of land measuring 500m by 500m and would like to erect a four barbed wire fence around it with a gate 5m wide. If the spacing between the posts is 5 m and each roll of barbed wire is 600m.

(c) Calculate the

(i) Perimeter of land (01mark)

$$= 500 \times 4 = 2000\text{m}$$

(ii) Number of fencing posts required (01Mark)

$$= \frac{\text{perimeter}}{\text{spacing}} + 1 = \frac{2000}{5} + 1 = 401\text{post}$$

(iii) Number of staples (U-nail) required(01mark)

$$\begin{aligned} \text{Number of U-nail} &= \text{number of post} \times \text{number of strand} \\ &= 401 \times 4 \\ &= 1604 \end{aligned}$$

(iv) Number of rolls of barbed wire (01mark)

$$\begin{aligned} \text{Number of rolls} &= \frac{\text{perimeter of the fence} \times \text{number of strands}}{\text{length of barbed wire}} \\ &= \frac{2000 \times 4}{600} = 13.3 \text{ or } 14\text{rolls} \end{aligned}$$

(d) Quality of good farm gate (06marks)

- should be made of strong post (king posts)
- should be reinforced with concrete
- should be wide enough to enable entrance of any farm structure
- made of durable materials
- easy to access
- should have a foot bath for disinfectants
- should have strong shutters

33. (a) Describe each of the following machines used on a farm.

(i) Lever

A lever is a simple machine consisting of a beam or rigid rod pivoted at a fixed hinge or fulcrum used to move heavy or firm fixed load with one end when pressure is applied to the other end.

Levers are grouped into three forms depending on the position of the 'pivot' i.e. 1<sup>st</sup> class lever, 2<sup>nd</sup> class lever and third class lever

(ii) Inclined plane

An inclined plane is a simple machine consisting of a flat supporting surface tilted at an angle (sloping), with one end higher than the other used to elevate or lift heavy loads by pushing or pulling the load

(iii) Pulley

A pulley is a simple machine consisting of a wheel on an axle or shaft that is designed to support movement and change of direction of a taut cable or belt or transfer of power between the shaft and cable used to lift heavy loads vertically. Pulleys are classified into three forms i.e. single fixed pulley, single movable pulley and block and tackle system.

(b) Give an example of how each of the machines in (a) can be used on a farm

(i) Lever

- Levers like wheelbarrows are used to lift and carry farm produce, manure, and rubbish from one point to another.
- Levers like crow bars are used to remove nails during construction.
- Hammers are used to fix nails during construction
- Scissors are used for cutting
- Levers such as shears are used to pick rubbish from a compound

(ii) Inclined plane is used for lifting heavy loads and loading it to trucks

(iii) Pulley

- Used in hoisting flags on the farm administration
- Used for lifting construction material
- Helps in loading trucks

34. (a) What is a hormone

**Hormones** are chemical messengers that coordinate various functions in your body. They carry messages through your bloodstream to organs, skin, muscles, and other tissues, telling your body what to do and when to do it.

**(b) State two roles of follicle stimulating hormone in the reproductive cycle of a cow.**

- **Stimulated development and growth of follicles in the ovary**
- **Responsible for secretion of estrogen**
- **Stimulates spermatogenesis**

**(c) Give three effects of hormones in milk production**

- Hormones initiate milk secretion e.g. prolactin, ACTH, somatotrophin (SHT) and thyrotrophin (TSF)
- Hormones control milk letdown e.g. oxytocin
- Hormones control milk hold-up e.g. adrenaline

**(d) Explain the causes of milk hold-up**

- Poor handling of animal prior to milking which induces the animal to produce adrenalin which cuts off blood supply to the udder and so causing milk hold up
- Abrupt change in the milking time or place excites the animal causing release of adrenalin
- Noise around or during milking cause release of adrenalin
- Presence of a foreigner frighten the cow

35. (a) Explain four factors to consider when sitting an apiary (06marks)

- Accessibility to water because bees need water for honey.
- Nearness to flowering plants to provide pollen and nectar
- Direction of the sun. Beehive should be placed facing north-south to avoid direct light and heat.
- Beehive need quiet place.
- Beehive should be placed in places with no strong wind.
- Beehive should be placed a safe distance from homestead and animal places to protect people from bee bites
- Beehive should be place in a place less humid place to prevent fungal infection.
- A beehive should be accessible to the farmers to harvest honey.
- Security from thieves
- Beehives should be protected from fire and smoke.

(b) State four methods that can be used to encourage bees to colonize a hive (04marks)

- Baiting: different baits are used to attract bees to the hive such honey and lemon grass.
- Providing a good environment in and around the hive i.e. cool dark environment
- Planting flowering plants; bee prefer to inhabit hives close to the flowing plants
- Placing a hive near a source of water
- Control predators like birds
- Capturing and placing the queen in the hive
- Using of pheromones in the new hive to attract bees in the hive
- Capturing and transferring a swam into the hive.

36. Figure 1 shows relative rates of water rise in three soil samples

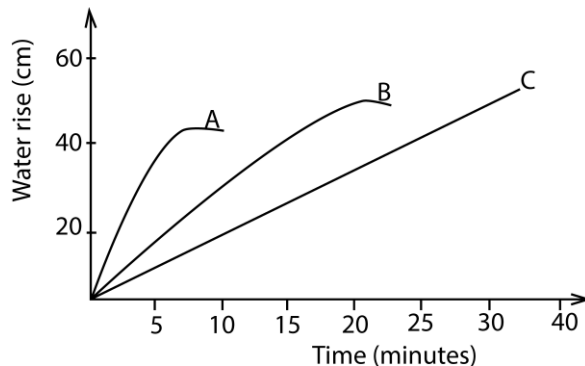


Fig. 1

(a) Describe the trend in the three soil samples (03marks)

- Water rises highest in soil sample C followed by B and lowest in A but rises fastest in A, followed by B followed by C.
- (b) Suggest the identity of soil samples A and C giving a reason in each case (02mark)
- A: sandy soil because water rises fastest due to big soil air spaces  
 C: clay soil because water rises slowest due to small soil air spaces
- (c) Give three ways in which the information portrayed by the graph is useful to a farmer. (03marks)
- Determine the type of crop to grow
  - Determine farming activities and practices to carry out
  - Determines the soil management practices
- (d) Name the forces that are responsible for holding water in the soil pore (02marks)
- Adhesive forces attracts water and soil molecule
  - Cohesive forces attracts water molecules together
37. (a) Give four effects of feeding animals on feeds lacking calcium
- Rickets (weak bones) in young animals or osteomalacia in old animals
  - Milk fever in early lactating animals due to heavy drain of calcium in the milk
  - Poor acid-base balance of the body fluid such as blood
  - Lameness
  - Stiff legs
  - Ruffled feathers
  - A reduction in growth
  - Leg bones appear rubbery
  - Joints become enlarged.
- b) State three observable symptoms of each of following nutritional disease
- (i) Milk fever
- Loss of appetite, poor GI tract movement, and cold extremities
  - Excitability, nervousness, hypersensitivity, and tremors
  - Weakness, weight shifting, and shuffling of hind feet
  - Lying down unable to stand, head in a tuck position, and unable to get up
  - If untreated the cow become comatose and dies within a day after the first sign.
- (ii) bloat
- Loss of appetite
  - Distention of the distention of the abdomen,
  - Feeling fullness, pressure, uncomfortable/distress
  - Rectal protrusion.
  - Difficulty breathing due to pressure on the diaphragm.
  - The animals stands with its legs spread wide apart and its head extended forward
  - The animal lies down and fails to stand up due to distress.

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Thanks

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