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UACE P515/3 Principles and practices of agriculture2 2018

2 hours

Instructions

Answer all questions

1. You are provided with specimen A and B which are extracts from fertilizers.
 - (a) Use them to carry out tests in table 1. Record your observations and deduction in the Table.

Test	Observations	deductions
(i) Put 1 cm ³ of A in a test tube, add copper turnings followed by four drops of concentrated sulphuric acid and warm		
(ii) Put 1 cm ³ of B in a test tube, add 3 drops of dilute nitric acid followed by silver nitrate solution		

- (b) From your results suggest the possible fertilizers from which each extracts was obtained. (02 marks)
 - A
 - B
 - (c) Basing on the major nutrients identified in each extract, suggest with reason, the extract most suitable to apply for giving leafy vegetable crops.
 - (d) Suggest two ways of applying the fertilizer from which each extract was obtained. Give a reason for your answer (02marks)
2. You are provided with specimen C (colostrum) and D (milk) which are livestock products
 - (a) Measure 50cm³ of specimen C and pour in a beaker. Add one spatula of ascorbic acid into the beaker, stir and leave for 3 minutes. Line a funnel with muslin cloth and place it on 100cm³ measuring cylinder. Pour the contents of the beaker into the funnel and record the volume of the filtrate and solids after dripping has stopped, in Table 1
 Repeat the procedure with D (02marks)
 Table 1

Specimen	Volume of filtrate (cm ³)	Volume of solids (cm ³)
C		
D		

- (b) (i) State the role of ascorbic acid in the experiment (01mark)
(ii) Calculate the percentage composition of solids in each of the specimens C and D
C
D
- (c) Basing on the results in (b)(ii), give the suitability of each specimen C and D for feeding calves
(i) C
(ii) D
- (d) (i) Name the filtrate produced
(ii) Give one product that can be made from the solid produced after filtration in (a)
3. Specimens E and F are commonly used in a farm Workshop
(a) Basing on the observed features, state the functions of each of the specimens (02marks)
E
F
(b) Describe how each specimen is used (04marks each)
(i) E
(ii) F
4. Specimen H₁ and H₂ are used in livestock management.
Examine them and answer the questions that follow.
(a) State the functions of each specimen (02marks)
(i) H₁
(ii) H₂
(b) Explain how any observable features on each specimen enable it to perform its function.
(02marks)
(i) H₁
(ii) H₂
(c) Describe the procedure of using each specimen to perform its function. (04mark)
(i) H₁
(ii) H₂
(d) Suggest any **two** precautions that should be taken when using each specimen (02marks)
5. Specimens J, K and L are common plants found on range lands
(a) Classify the specimens into three groups according to their economic importance. (03marks)
(b) State **one** effect of each specimen on the quality of range land. (02marks)
J
K
L
(c) Explain one likely negative effect of feeding a lactating cow with each of the specimen K and L
(02marks)
(i) K

- (ii) L
- (d) Basing on observable features, suggest with a reason one method of propagating each specimen
 - (i) J
 - (ii) K
 - (iii) L

END

Comments

1. (a) Test (a)(i) tests for nitrates, and common fertilizers that contain nitrates are **ammonium, sodium, potassium, and/or calcium nitrates:**

Observations: solution turns blue with brown fumes

Test (a) (ii) test for chlorides and the common fertilizers that contain chlorides are potassium chloride

Observations: white ppt. formed

- (c) A because it contains nitrates that promote formation of chlorophyll in leafy crops
 - (d) Fertilizers A and B can be applied by scattering because they are solids or by dissolving and spraying because they are soluble in water
2. (a) C (colostrum) : is produces less volume of filtrate and more volume of solid than D (milk)
 - (b) (i) Ascorbic acid lowers pH and cause the casein proteins to denature and clump together.
 - (ii) Percentage of solid = $\frac{\text{volume solid}}{50} \times 100\%$ (C has a higher percentage about 23% than D about 13%)
 - (c) (i) C is for newborn calf because it is richer in casein proteins for muscle growth and development
 - (ii) D is best for older calves because it contains less casein proteins
 - (d) (i) whey protein
 - (ii) Casein is used in **prepared foods, in medicines and dietary supplements, and in cosmetics.**

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Thanks

Dr. Bbosa Science

