Reg. No._____

UNIVERSITY OF EMBU

2017/2018 ACADEMIC YEAR

SECOND SEMESTER EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE, BACHELOR OF SCIENCE (BIOLOGY), BACHELOR OF SCIENCE (ENVIRONMENTAL CONSERVATION AND NATURAL RESOURCES MANAGEMENT), BACHELOR OF SCIENCE (MICROBIOLOGY AND BIOTECHNOLOGY) AND BACHELOR OF EDUCATION

SBT 204: PLANT STRUCTURE AND FUNCTION

DATE: APRIL 12, 2018 **TIME: 11:00 – 1:00 PM**

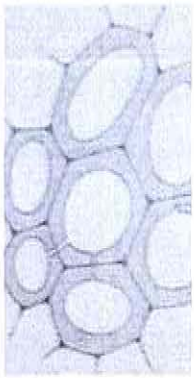
INSTRUCTIONS: Answer **ALL** Questions from **SECTIONS A** and **B**, and **ONE** Question selected from **Section C**.

SECTION A: Multiple Choice Questions (1 Mark each)

Please tick in the box opposite the correct answer.

1. The following are meristematic tissues except
    a) Interfascicular cambium
    b) Pericycle
    c) Cork-cambium
    d) Cambium ring
2. A plant cell A with water potential of -1000KPa is immersed in salt solution B whose water potential is -200 KPa. In which direction will water flow?
    a) A to B
    b) Both
    c) B to A
    d) None of the above

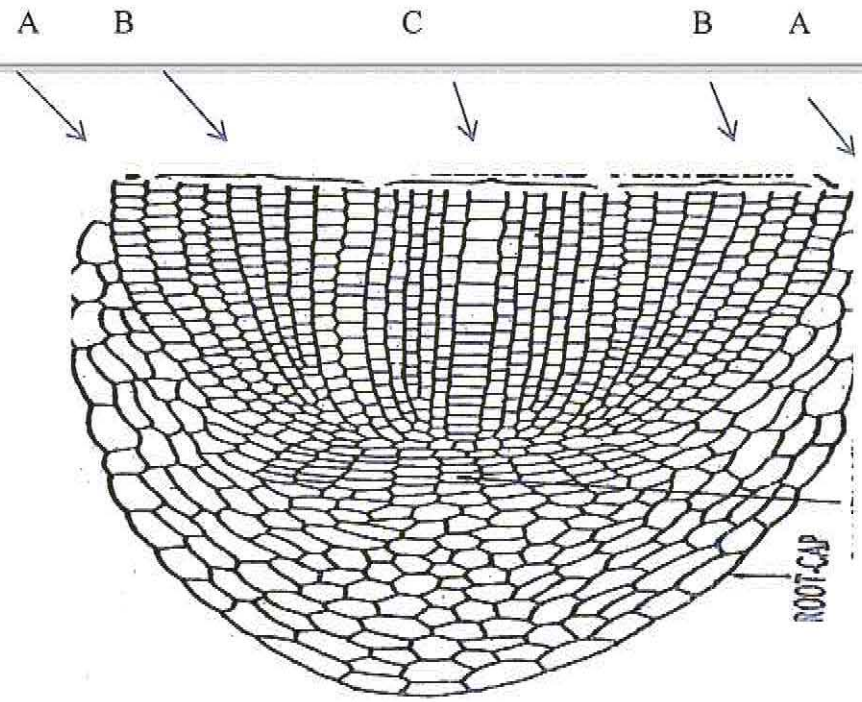
3. Internal factors that are necessary for germination include
    a) light
    b) optimum temperature
    c) viable embryo
    d) water
4. Which one of the following is not a components of embyro axis?
    a) Cotyledon
    b) Plumule
    c) Endosperm
    d) Radicle
5. Which one of the following is not a Primary essential mineral?
    a) Calcium
    b) Potassium
    c) Phosphorus
    d) Nitrogen
6. What could you conclude about the diagram below



    a) Its made of living cells
    b) Wall material include cellulose, pectin, hemicellulose, fib
    c) Its distributed in the cortex, pericycle, xylem, phloem seed coat
    d) Main function is support
7. The main function of spongy parenchyma is
    a) Diffusion of gases
    b) Translocation of food material
    c) Conduct and distribute water
    d) Mechanical support

8. The following are C_4 pathway products except
    a) Adenosine triphosphate
    b) Oxaloacetic acid
    c) Malic acid
    d) Aspatic acid
9. The following are the components of a golgi complex. Which one is not?
    a) Double mebrane
    b) Tubules
    c) DNA
    d) Cisternae
10. Oxidation of carbohydrate does not involve
    a) Glycolysis
    b) Oxidative decarboxylation
    c) photophosphoryration
    d) Kreb's cycle

Below is a diagram of a root apex. Study the diagram and answer question 11 and 12



11. Name part labeled B above.
    a) Dermatogen
    b) periblem
    c) Vascular bundles
    d) Plerome
12. What are the functions of part A
    a) Gives rise to skin layer
    b) Forms a procambium
    c) Forms cortex of the stem
    d) None of the above
13. Which one of the following is not a components of a bark?
    a) Epidermis
    b) Lenticels
    c) Hypodermis
    d) Cork

14. Vascular tissue system is not made of

    a) Pithrays
    b) Phloem
    c) Cambium
    d) Xylem

15. Which one of the following is not part of ground tissue systems?

    a) Parenchyma
    b) Sclerenchyma
    c) epidermis
    d) Lactiferous

SECTION B: SHORT ANSWER QUESTIONS (5 Marks Each)

Your answers should be brief and to the point (Use the examination answer book provided)

16. Outline the promeristems and the tissue systems they form in plants. (5 marks)
17. Compare five features of dicotyledonous and monocotyledonous root (5 marks)
18. Explain any five physiological functions of mineral nutrients that influence plant growth and development. (5 marks)
19. Draw a well labeled diagram of a phloem (5 marks)
20. Outline any five ways of breaking seed dormancy. (5 marks)
21. Explain the functions of epidermal tissue system (5 marks)

SECTION C: ESSAY QUESTIONS (25 Marks Each)

Write an essay on any ONE of the following topics (Use the examination answer book provided)

22.

a) A student wanted to prepare a permanent microscopic slide of transverse section of a dicotyledonous stem. Illustrate how the section would appear. (15 marks)
b) Describe the types of xylem vessels thickening. (10 marks)

23.

a) Illustrate the oxidation of carbohydrates in plant cells. (20 marks)
b) Outline the significance of kreb's cycle. (5 marks)

24.

a) Relate the structure of a leaf to its functions (15 marks)

b) Describe endosperm and its functions (10 marks)

25.

a) Describe the cambium activity (10 marks)

b) Give an experimental demonstration to show that essential nutrients are necessary for the normal development of green plants. (15 marks)

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