THE OPEN UNIVERSITY OF SRI LANKA
B.Sc./B.Ed. DEGREE PROGRAMME – 2007/2008
BOTANY – LEVEL 04
BTU 2201/BTE 4201 – PLANT PHYSIOLOGY
ASSESSMENT TEST III – (NO BOOK TEST)
DURATION : ONE (01) HOUR

Registration No. .....

DATE : 26th April 2008 **TIME: 3.00 p.m. – 4.00 p.m.**

ANSWER ALL QUESTIONS

01. Fill in the blanks with the most appropriate word/words.

(a) Growth and development is a result of three simple events at the cellular level, cell division, _____ _____ and _____ _____.

(b) In most plants, auxin is synthesized from amino acid _____.

(c) The hormone that triggers mobilization of stored food in germinating cereal grains is _____.

(d) Gibberellins were first discovered in fungal extracts of _____ _____.

(e) Cytokinins are _____ derivatives. _____ apical meristems are the major sites of synthesis of cytokinins.

(f) Ethelene is released by plants as a _____ and affects _____ of fruits and leaf drop.

(g) A response in which a plant organ curves in a certain direction due to differential growth is called a _____.

(h) The active form of phytochrome is _____ and it is formed when _____ light is absorbed.

(i) Plants that grow in high salt soils are known as _____.

(j) _____ is the response of plant organs to gravity.

(k) Abnormal growth termed "triple response" in seedlings is caused by the hormone _____.

(l) Asymmetric distribution of _____ causes differential growth reaction in phototropism and geotropism.

(m) Plants which flower after a period of vegetative growth, regardless of the photoperiod are known as _____ plants.

(n) Induction of flowering by a _____ treatment is called vernalization.

(o) Photoperiod is detected by the _____ of a plant and information about it is sent to floral buds, perhaps by an unidentified hormone tentatively termed _____.

02. State whether the following statements are true or false.

(a) ..... Leaves and stems exhibit positive phototropism.

(b) ..... Statolith theory explains how the gravitational stimulus can be perceived by a plant.

(c) .....Both auxins and gibberellins cause cell elongation.

(d) ..... The downward curvature of leaves that occurs when the upper side of the petiole grows faster than the lower side is called thigmonasty.

(e) ..... Carrot and cabbage plants with a rosette type of growth can be made to bolt and flower by treating with the hormone abscisic acid.

(f) ..... A synthetic auxin 2, 4 D is used as a selective herbicide.

(g) ..... Abscisic acid is also known as the "stress hormone".

(h) ..... When a detached leaf is floated in water containing cytokinin, leaf will turn yellow due to the breakdown of chlorophyll.

(i) ..... GA is used in germination of barley grains in malting during beer manufacture.

(j) ..... Coconut water causes plant tissues to undergo cell division due to the presence of cytokinin.

03. (a) What is the possible explanation for apical dominance?

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(b) Why do auxins inhibit the growth of lateral buds but not that of the terminal bud that produces it?

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(c) List five (05) functions of auxins in plants.

i. .....

ii. .....

iii. .....

iv. .....

v. .....

(d) What is parthenocarpic fruit development? Give two (2) hormones which regulate parthenocarpic fruit development.

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(e) Give two 02 commercial uses of auxins.

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(f) Explain the following terms.

i. Photoperiodism.

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ii. Long-day palnts

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iii. Hydronasty

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iv. Brassinosteriods.

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PART – II

Registration No.....

Multiple choice questions.

Underline the most appropriate answer.

01. Which one of the following statements about plant hormones is false?

a) Abscisic acid generally promotes growth.

b) Gibberellins promote cell elongation.

c) Cytokinins promote cell division.

d) Ethylene contributes to the aging of plants.

02. Axiliary buds near the base of shoot may grow faster than axiliary buds near the shoot apex because they are,

a) close to a cytokinin source

b) further away from an auxin source

c) both (a) and (b)

d) further away from an abscisic acid source.

03. Auxin in plants are known to affect all of the following phenomena except

a) geotropism of roots

b) maintenance of dormancy

c) inhibition of lateral buds

d) development of fruits.

04. According to modern ideas about phototropism in plants

a) light causes auxin to accumulate on the shaded side of a plant stem.

b) auxin stimulates elongation of plant stem cells.

c) auxin is produced by the tip of the coleoptile and moves downward.

d) all of the above are correct.

05. When growing plant tissues in culture, auxin is used to stimulate cell enlargement?

a) Ethylene

b) Gibberellin

c) Cytokinin

d) Abscisic acid

06. A flash of white light given during the middle of the night to a short day plant will

a) cause increased flower production

b) have no effect on flowering

c) inhibit flowering

d) stimulate flowering

07. Punching off of the tips of many plants cause them to branch because

a) apical dominance has been disrupted

b) most of the auxin in these plants is produced in the growing tips and auxin normally inhibit branching.

c) the growing tip uses up all the auxin produced and when the tips are removed, there is enough auxin to stimulate lateral branch formation.

d) Two of the above are correct.

08. Spraying fruits with cytokinins to keep then for a longer period after harvesting may help counteract the effect of

a) abscisic acid

b) ethylene

c) auxin

d) gibberellin

09. Seed germination is most commonly inhibited by

a) gibberellins

b) auxins

c) abscisic acid

d) cytokinins

10. Which of the following statements is incorrect?

a) Nastic movements are growth movements that occur independently of the direction of the stimulus.

b) Nastic movements are not permanent.

c) Nastic movements involve temporary variations in position which are reversible.

d) Twining of tendrils of plants is an example of nastic movements