RET/15/Test B

56

749 | Plant Physiology

Question Booklet No. ..... 35 .....

*(To be filled up by the candidate by **blue/black ball-point pen**)*

Roll No. | | | | | | | | | |

Roll No. (Write the digits in words) .....

Serial No. of OMR Answer Sheet .....

Day and Date ....

(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only ***blue/black ball-point pen*** in the space above and on both sides of the ***Answer Sheet***)

1. Within 10 minutes of the issue of the Question Booklet, Please ensure that you have got the correct booklet and it contains all the pages in correct sequence and no page/question is missing. In case of faulty Question Booklet, bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall ***except the Admit Card without its envelope.***
3. ***A separate Answer Sheet is given. It should not be folded or mutilated. A second Answer Sheet shall not be provided.***
4. Write your Roll Number and Serial Number of the Answer Sheet by pen in the space provided above.
5. ***On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.***
6. ***No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and Roll No. and OMR sheet No. on the Question Booklet.***
7. ***Any changes in the aforesaid-entries is to be verified by the invigilator, otherwise it will be taken as unfair means.***
8. ***This Booklet contains 40 multiple choice questions followed by 10 short answer questions. For each MCQ, you are to record the correct option on the Answer Sheet by darkening the appropriate circle in the corresponding row of the Answer Sheet, by pen as mentioned in the guidelines given on the first page of the Answer Sheet. For answering any five short Answer Questions use five Blank pages attached at the end of this Question Booklet.***
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. ***Note that the answer once filled in ink cannot be changed.*** If you ***do not wish to attempt*** a question, leave all the circles in the corresponding row blank (such question will be awarded zero marks).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit ***both OMR Answer Sheet and Question Booklet*** at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

Total No. of Printed Pages : 15

SEAL

FOR ROUGH WORK

Research Entrance Test – 2015

No. of Questions : 50

Time : 2 Hours *Full Marks : 200*

Note : (i) This Question Booklet contains **40** Multiple Choice Questions followed by **10** Short Answer Questions.

(ii) Attempt as many MCQs as you can. Each MCQ carries **3 (Three)** marks. **1 (One)** mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question. If more than **one** alternative answers of MCQs seem to be approximate to the correct answer, choose the closest one.

(iii) Answer only **5** Short Answer Questions. Each question carries **16 (Sixteen)** marks and should be answered in **150-200** words. Blank **5 (Five)** pages attached with this booklet shall only be used for the purpose. Answer each question on separate page, after writing Question No.

1. "Fluid mosaic model" relates to the structure of :
   (1) Cell wall (2) Protoplasm
   (3) Plasma membrane (4) Nucleic acid

2. Spongy tissue of mango is a :
   (1) Bacterial disease (2) Physiological disease
   (3) Viral disease (4) Fungal disease

3. A purpose of initiating a conscious and purposeful action is called :
   (1) Education (2) Motivation (3) Action (4) Coordination

4. Yellow colour of egg is due to :
   (1) Carotene (2) Xanthophyll (3) Anthocyanin (4) Vitamin B

5. During prophase-I of meiosis crossing over occurs at :
   (1) Zygotene (2) Pachytene (3) Diplotene (4) Diakinesis

6. In which crop the use of Blue-Green Algae as a bio-fertilizer will be most useful ?
   (1) Maize (2) Potato (3) Rice (4) Sugarcane

7. Lycopene pigment is present in :
   (1) Beetroot (2) Tomato (3) Radish (4) Chilli

8. Ooze test is done to detect :
   (1) Bacterial disease (2) Fungal disease
   (3) Viral disease (4) All of these

9. Number of chromosome in wheat endosperm is :
   (1) 21 (2) 42 (3) 63 (4) 14

10. Acridine orange is used for inducing :
   (1) DNA denaturation (2) Mutagenesis
   (3) Chiasma formation (4) Bacterial transduction

11. In the process of absorption of water by roots, which of the following is the driving force for movement of water from soil to root ?

(1) Difference in moisture content between soil and root

(2) Transpiration rate

(3) Difference in water potential between soil and root

(4) Difference in osmotic potential between soil and root

12. After cellulose, which of the following organic substance is most abundant on earth ?

(1) Lignin (2) Hemicellulose

(3) Suberin (4) Starch

13. Which of the following statement is true for film forming type of antitranspirants ?

(1) Per cent transpiration rate and CO_2 influx rate in leaves are decreased equally

(2) Per cent reduction in transpiration rate is more than per cent reduction in CO_2 influx rate in leaves by them

(3) Per cent reduction in transpiration rate is less than per cent reduction in CO_2 influx rate in leaves by them

(4) They decrease only transpiration rate but not the CO_2 influx rate in leaves.

14. Which of the following statement is true for guard cells ?

(1) They have thick cell walls (2) They are devoid of mitochondria

(3) They are devoid of vacuoles (4) They are devoid of plasmodesmata

15. Transpiration ratio of which of the following plants is observed to be the minimum ?

(1) C_3 plants (2) C_4 plants (3) Trees (4) CAM plants

16. Which of the following substance is ***not*** involved in osmoregulation process of plants ?

(1) Starch (2) Soluble proteins (3) Sucrose (4) Organic acids

17. Sublgene is concerned with which of the following phenomenon ?

(1) Drought resistance in plants (2) Salt resistance in plants

(3) High temperature stress in plants (4) Waterlogging resistance in plants

18. Which of the following is the characteristic of saline-sodic soil ?

(1) ECe> 4.0, pH >8.5, ESP<15 (2) ECe >4.0, pH <8.5, ESP<15

(3) ECe >4.0, pH >8.5 , ESP> 15 (4) ECe<4.0, pH< 8.5 , ESP<15

19. Which of the following statement is true for permanent wilting point ?

(1) Wilted plants cannot regain turgidity even if they are irrigated

(2) Wilted plants cannot regain turgidity when shoot is placed in humid chamber

(3) Wilted plants can regain turgidity when shoot is placed in humid chamber

(4) Plant are permanently dead

20. A cell has solute potential-1.2 MPa and turgor pressure 0.30 MPa . What will happen if this cell is placed in a solution of osmotic pressure of 0.9 MPa ?

(1) Cell will be plasmoysed (2) Cell will become more turgid

(3) Cell will neither gain or lose turgidity (4) Cell will be reach in flaccid stage

21. Which of the following is the site of synthesis of ribosomes in a cell ?

(1) Chloroplast (2) Mitochondria

(3) Nucleolus (4) Endoplasmic reticulum

22. In which of the following form iron is transported across the plasma membrane of plant roots ?

(1) Fe-chelate (2) Fe^{+2}

(3) Fe^{+3} (4) Fe^{+2} and Fe^{+3} both

23. How many water molecules are required to generate one O_2 in the light reaction of photosynthesis ?

(1) 1 (2) 2 (3) 3 (4) 4

24. Second pyrrole ring of porphyrin of Chlorophyll b contains one of the following groups :

(1) $-CHO$ (2) $-CH_3$ (3) $-COOH$ (4) $-NH_2$

25. In C4 plants 1 molecule of CO_2 reduction requires the following :

(1) 5ATP and 3NADH (2) 2ATP ATP and 1NADH

(3) 3ATP and 2NADH (4) 2ATP and 3NADH

26. Existance of Dark reaction in photosynthesis was firstly demonstrated by :

(1) Jan Ingenhousz (2) Robert Emerson

(3) Robin Hill (4) Frederick.Blackman

27. Granal and agranal chloroplasts are present in :

(1) Rice (2) Wheat (3) Sorghum (4) Sunflower

28. In last step' of Calvin -Benson cycle, meant for the formation of Ribulose 1 ,5,bis phosphate requires which of the following substances :

(1) ATP (2) ATP and Mg (3) $NADP^-$ (4) $NADPH_2$

29. Cytochrome b is a :

(1) Simple protein (2) Mo-Protein

(3) Cu- Protein (4) Fe -Protein

30. Zadoks scale is used to know about the Pheno-phages of which of the following crop :

(1) Barley (2) Wheat (3) Rice (4) Mustard

31. In which of the following reaction/cycle/pathway Partial oxidation of glucose takes place :

(1) Reductive pentose phosphate pathway

(2) Aerobic respiration

(3) Citric acid cycle

(4) Oxidative pentose phosphate pathway

32. What is approximate light utilization efficiency of normal field crops :

(1) 0.5% (2) 5% (3) 10% (4) 15%

33. Which of the following occurs in presence of Cytokinins :

(1) Radicle formation in plants (2) Chlorophyll retention in leaves

(3) Climacteric in fruits (4) Lateral expansion of shoot growth

34. Cristae are :

(1) Present in Inner membrane of mitochondria

(2) Present in Outer membrane of mitochondria

(3) Present in Inner membrane of chloroplast.

(4) Present in Inner membrane of ribosome

35. Critical day lengths of plant *A* and *B* is equal i.e.18 h. At 6 h of photoperiod, plant A flowers but B does not flowers. Categorize plant *A* and *B* on the basis of their photoperiodic responses :

(1) Both are long day (2) Both are short day

(3) A is long day and B is short day (4) A is short day and B is long day.

36. Which of the following plant requires only one photo-inductive cycle for flowering :

(1) Hibiscus (2) Marigold (3) Rose (4) Xanthium

37. Methionine is the precursor of :

(1) Auxin biosynthesis, (2) Ethylene biosynthesis,

(3) Amino acid biosynthesis, (4) Lipid biosynthesis.

38. Which of the following ***one*** is not a light-regulated enzyme of the Calvin cycle ?

(1) Rubisco

(2) NADP :glyceraldehyde-3-phosphate dehydrogenase

(3) Aldolase

(4) Ribulose-5-phosphate kinase

39. The redox potential for the reduction of oxygen to water is

(1) −0.72 V (2) +0.82 V (3) +0.88 V (4) +0.92 V

40. PEP Carboxylase activity in C4 and CAM Plants is regulated by

(1) carboxylation (2) phosphorylation

(3) decarboxylation (4) isomerisation

Attempt any five questions. Write answer in 150-200 words. Each question carries 16 marks. Answer each question on separate page, after writing Question Number.

1. What do you mean by chloroplast dimorphism ? Describe the structure of chloroplasts of higher plants.

2. Describe the significance of osmoregulation in plants. How it helps in survival of plants under drought stress.

3. What is the site for TCA cycle ? Write the steps of TCA cycle where CO_2 is released and write the step where substrate level phosphorylation occurs ?

4. Write the pathway of β-oxidation.

5. Classify crop canopies on the basis of leaf angles.

6. Differentiate between plant type and ideotype. Describe wheat ideotype for barani cultivation in India.

7. Write the deficiency symptoms of essential mineral nutrient(s) that constitute the chlorophyll molecule.

8. What are the light sensitive steps in carbon dioxide fixation of Calvin cycle ?

9. Describe briefly your understanding about somatic hybridization. How can it be exploited in plant improvement programme ?

10. Define photoperiodism. What is the site for photoperiodic induction in plants ? Give the evidences to support that the nature of flower inducing substance(s) is/are same in long day and short day plants.

Roll No. : .....

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FOR ROUGH WORK