

BRAINWARE UNIVERSITY

Term End Examination 2018 - 19

Programme - Bachelor of Science (Honours) in Biotechnology

Course Name - Plant Physiology & Biotechnology

Course Code - BBT203

(Semester -II)

Time allotted: 3 Hours Full Marks: 70

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

own words as far as practicable.] Group -A (Multiple Choice Type Question) $10 \times 1 = 10$ 1. Choose the correct alternative from the following (i) Scientist Levitt proposed the theory of proton transport during stomatal opening & closing in the year; b. 1874 a. 1847 c. 1947 d. 1974 (ii) 0.6M Mannitol solution is an example of a. Isotonic solution b. Hypotonic solution c. Hypertonic solution d. None of these. The space between the cell wall and plasma membrane in a plasmolysed cell is filled (iii) with a. Isotonic solution b. Hypotonic solution c. Hypertonic solution d. Water (iv) Flavonoids is an example of a. Plant growth regulator b. Plant primary metabolites c. Plant secondary metabolites d. None of these. (v) Which of the following enzyme is used to cut DNA molecule in recombinant DNA technology? a. Phosphatase b. Ribonuclease c. Restriction enzyme d. Ligase (vi) Polyploidy is induced through a. Irradiation b. Mutagenic chemicals d. Colchiine c. Ethylene

| | (vii) | Th | - | asmid used l pSC101 | by Coher | n and Boyer fo | | r transformation experime PUC17 | nt was | | |
|--------|---|--|--|-------------------------------|------------|-----------------|------------|--|-------------------|--|--|
| | | | | - | | | | | | | |
| | (viii | c. pBR322 d. E. coli plasmid i) Which plant growth regulator is responsible for saving the crops from falling | | | | | | | | | |
| | (, , , , , | , ,, | | Cytokinin | ii regula | itor is respons | | Auxin | 5 | | |
| | | | | Ethylene | | | | Gybberellin | | | |
| | (ix) | Ma | | the following | ıo. | | | J | | | |
| | (1/1) | | | ectrophoresis | _ | (p) Gene tra | nsfer i | n plants | | | |
| | | (2) Probe (q) Breaks bond between insulin and –galactos | | | | | | | tosidase | | |
| | | (3) | on | | | | | | | | |
| | | (4) | (4) Ti plasmid (s) Separation of DNA segments. | | | | | | | | |
| | | | | 1-r, 2-s, 3-c | | | | 1-s, 2-r, 3-q, 4-p | | | |
| | | | | 1-p, 2-r, 3-c | • | | | 1-q, 2-p, 3-s, 4-r | | | |
| | (x) | Wł | | plant growt Auxin | h regulat | tor helps in br | _ | g the dormancy of plants? Gibberellin | | | |
| | | | c. | Cytokinin | | | d. | Ethylene | | | |
| | | | | | | | | | | | |
| | | | | | | Group | – B | | | | |
| | | | | | (S | hort Answer | Гуре (| Questions) | $3 \times 5 = 15$ | | |
| | Ansv | wer an | v th | aree from the | e followi | ng | | | | | |
| | Answer any <i>three</i> from the following 2. Write the chemical nature and structure of GA ₃ . | | | | | | | 5 | | | |
| | 3. | | Ex | plain the me | chanism | of food transp | port in | plant with diagram. | 3+2 | | |
| | 4. | (a) | | rite the types provement. | of plant | breeding for | qualita | ative and quantitative crop | 3 | | |
| | | (b) | Me | ention the dif | fferent bo | ody parts of p | lant us | ses in micropropagation. | 2 | | |
| | 5. | | | nat is the rec | | t DNA techno | ology? | Mention the main factors | 2+3 | | |
| | 6. | (a) | Wı | rite the full f | orm of 'l | MAS'. How it | t helps | in crop improvement. | (1+2) | | |
| | | (b) | Ide | entify the fun | ections of | f molecular ve | ector i | n gene cloning | 2 | | |
| | | | | | | | | | | | |
| | | | | | | Group - | - C | | | | |
| | | | | | (Lo | ng Answer T | ype Qı | uestions) | 3 x 15 = 45 | | |
| Ans 7. | wer aı (a) | • | | om the follow describe the | ing | t pathway if I | | , | 8 | | |
| | (b) | | | | | | | | ine 5+2 | | |
| 8. | (a) | Wha | at is | | | | ata wit | th appropriate labelling. W | That 2+3+2 | | |
| | (b) | | | ne mechanisi etabolites? | m of ope | ning and clos | ing of | stomata. What is secondar | ry 6+2 | | |

| 9. | (a) | AB somatic hybrid is developed through protoplast fusion between parent A (susceptible) & B (disease resistant), discuss the followings with necessary | | | | | | | |
|-----|-----|--|-----|--|--|--|--|--|--|
| | | diagram; i) Importance, ii) Major reagents/chemical required, iii) Steps in brief, iv) Limitations, v) Confirmation of hybridity. | | | | | | | |
| | (b) | Write the differences between hybrid & cybrid. | 2 | | | | | | |
| 10. | (a) | Explain recombinant DNA technology in reference with principle, procedure 2+3+2+3 and applications with diagram. | | | | | | | |
| | (b) | Highlight the methods of gene transfer in plant. | 2 | | | | | | |
| | (c) | Briefly describe the advantages and disadvantages of GM crops. | | | | | | | |
| 11. | (a) | Establish the relationship between Ψw and Ψs. | | | | | | | |
| | (b) | Write the difference between hypotonic and hypertonic solution with suitable example. | | | | | | | |
| | (c) | Explain the deficiency symptoms of N, P & K in plant. | 3 | | | | | | |
| | (d) | Write short notes on i. Restriction endonuclease. ii. TA Cloning. | 2+3 | | | | | | |
| | | | | | | | | | |