**Ph.D. COMMON ENTRANCE TEST**

**SUBJECT – BIOTECHNOLOGY**

**Roll No:**

**PART B**

**Duration: 60 minutes Maximum Marks: 50**

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| **Instructions:**   1. **This entrance test question paper is not to be taken out of the examination hall** 2. **Question paper consists of Section A and Section B** 3. **Section A consists of 30 MCQs carrying 1 Mark each. Write the Alphabet of the correct answer in the space given.** 4. **Section B consists of Descriptive questions carrying 5 marks each. Restrict your answer to 500 words. Additional plain sheets have been attached to the question paper to answer Section B** |

**SECTION – A**

**Answer the following questions by writing the Alphabet of the correct answer in the Box given: 30 X 1 = 30**

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| 1. | The group comprising the smallest cellular organisms which represents the oldest kingdom of evolution is   1. Monera 2. Protista 3. Fungi 4. Plantae |
| 2. | Restriction enzymes were discovered by   1. Smith and Nathans 2. Alexander Fleming 3. Berg 4. None |
| 3. | Flavr Savr is a genetically engineered variety of which among the following?   1. Soya Bean 2. Maize 3. Rice 4. Tomato |
| 4. | Klenow fragment is derived from   1. DNA Ligase 2. DNA Pol-I 3. DNA Pol-II 4. Reverse Transcriptase |
| 5. | Southern blotting is   1. Attachment of probes to DNA fragments 2. Transfer of DNA fragments from electrophoretic gel to a nitrocellulose sheet 3. Comparison of DNA fragments to two sources 4. Transfer of DNA fragments to electrophoretic gel from cellulose membrane |
| 6. | ELISA is   1. Using radiolabelled second antibody 2. Usage of RBCs 3. Using complement-mediated cell lysis 4. Addition of substrate that is converted into a coloured end product |
| 7. | The Golden Rice variety is rich in   1. Vitamin C 2. Β-carotene and ferritin 3. Biotin 4. Lysine |
| 8. | Plasmids are used as cloning vectors for which of the following reasons?   1. Can be multiplied in culture 2. Self-replication in bacterial cells 3. Can be multiplied in laboratories with the help of enzymes 4. Replicate freely outside bacterial cells |
| 9. | The human genome project was launched in the year   1. 1980 2. 1973 3. 1990 4. 1989 |
| 10. | The vaccines prepared through recombinant DNA technology are   1. Third generation vaccines 2. First-generation vaccines 3. Second-generation vaccines 4. None |
| 11. | Agar-Agar is obtained from   1. *Gelidium* 2. *Polysiphonia* 3. *Fucus* 4. *Spirulina* |
| 12. | Which of these is a genetically modified crop?   1. Bt-cotton 2. Bt-brinjal 3. Golden rice 4. All |
| 13. | PCR technique was invented by   1. Karry Mullis 2. Boyer 3. Sanger 4. Cohn |
| 14. | Light is required for the light-dependent reactions because   1. it is the source of electrons 2. it splits the water molecule 3. it energizes electrons in the reaction center 4. it splits ATP molecules which generates the energy necessary to power the light-independent reactions |
| 15. | RNA interference helps in   1. Cell proliferation 2. Micropropagation 3. Cell defence 4. Cell differentiation |
| 16. | Colors of light most useful in photosynthesis are   1. green, yellow, and orange 2. red, violet, and blue 3. infrared, red, and yellow 4. red, white, and blue |
| 17. | Pea plants can   1. self-pollinate, but are not self-compatible 2. Self-fertilize 3. only cross-fertilize 4. reproduce without pollination |
| 18. | Excision and insertion of a gene is called   1. Biotechnology 2. Genetic engineering 3. Cytogenetics 4. Gene therapy |
| 19. | The expression of a transgene in the target tissue is identified by a   1. Transgene 2. Promoter 3. Enhancer 4. Reporter |
| 20. | What does the first name in the scientific name of an organism denote?   1. Species 2. Genus 3. Order 4. Class |
| 21. | What is a plant cell wall mainly composed of?   1. Vitamin 2. Lipids 3. Cellulose 4. Protein |
| 22. | Heterocysts are found in \_\_\_\_\_ .   1. Cyanobacteria 2. Bryophytes 3. Pteridophytes 4. Algae |
| 23. | Plants differ from animals in that plants have   1. an endoplasmic reticulum 2. a central vacuole 3. Golgi complexes 4. vesicles |
| 24. | Which of the following minerals plays a major role in energy storage and transfer of ADP into ATP molecules?   1. Phosphorus 2. Magnesium 3. Molybdenum 4. None of the above |
| 25. | ———– is used as a vector for cloning into higher organisms   1. Retrovirus 2. Baculovirus 3. *Salmonella typhimurium* 4. *Rhizopus nigricans* |
| 26. | Which bacterium is used in the production of insulin by genetic engineering?   1. *Saccharomyces* 2. *Rhizobium* 3. *Escherichia* 4. *Mycobacterium* |
| 27. | Coconut milk contains a cytokinin called \_\_\_\_ which promotes plant growth.   1. Naphthalene acetic acid 2. Indole-3-acetic acid 3. Gelatin 4. Zeatin |
| 28. | The significance of the day length in plants was first shown in:   1. Barley 2. Lettuce 3. Tobacco 4. Tomato |
| 29. | Tendrils of garden peas coiling around any support signify:   1. Seismonasty 2. Thigmotaxis 3. Gravitropism 4. Thigmotropism |
| 30. | Living cells placed in an isotonic solution tend to retain their shape and size. This is based on the principle of   1. Diffusion 2. Transpiration 3. Osmosis 4. None of the above |

**Section - B**

**Answer any four questions (Each question carry 5 marks 4\*5 = 20**

1. Describe the process of carbon fixation in plants.
2. Discuss the conservation of endangered plants.
3. Give an account of any two mechanisms of PGPR in promoting plant growth.
4. Explain the production of acetic acid at the industrial level.
5. Discuss the importance of patenting.
6. Describe the different types of mutations.

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