

**Model Exam - Answer Key**

Total marks - 30

| Category  | Question No: | Answer key / Value points   | Split score       | Total score |
|-----------|--------------|---|-------------------|-------------|
| Part I A  |              | Answer any 3 questions from 1 - 4. Each carries 1 mark  |                   |             |
|           | 1.           | DNA Ligase / Ligase   | 1                 | 1           |
|           | 2            | Scutellum   | 1                 | 1           |
|           | 3            | Mycorrhiza  | 1                 | 1           |
|           | 4            | (d) $GPP - R = NPP$   | 1                 | 1           |
| Part I B  |              | Answer all questions from 5 - 6. Each carries 1 mark  |                   |             |
|           | 5            | Transgenic animals  | 1                 | 1           |
|           | 6            | Pericarp  | 1                 | 1           |
| Part II A |              | Answer any 2 questions from 7 - 9. Each carries 2 mark  |                   |             |
|           | 7            | (a) Proinsulin composed of Chain A & Chain B polypeptides are connected with an extra stretch called the C peptide.<br>(b) C peptide is removed during maturation . | 1<br>1            | 2           |
|           | 8            | Zoospores - Chlamydomonas<br>Buds - Hydra<br>Conidia - Penicillium<br>Gemmules – Sponges  | $\frac{1}{2} * 4$ | 2           |
|           | 9            | Multiple Ovulation Embryo Transfer Technology.<br>FSH (Follicle stimulating hormone)  | 1+1               | 2           |
| Part II B |              | Answer any 2 questions from 10 – 13. Each carries 2 marks   |                   |             |
|           | 10           | Euryhaline organisms :- Can tolerate wide range of salinity<br>Stenohaline organisms :- can tolerate narrow range of salinity.                                      | 1+1               | 2           |
|           | 11           | Polyembryony .<br><br>Example :- Seeds of orange, citrus, mango (any 1 example)   | 1<br>1            | 2           |

|            |    |   |  |   |
|------------|----|---|--|---|
|            | 12 | Selection of good breeds (high yielding and disease resistant),<br>They have to be housed well ,Provide proper food & water, Keep proper records etc.<br><br>(Any 2 responses)  | 1+1  | 2 |
|            | 13 | Pioneer species -Phytoplankton. Climax community – Forest.<br><br>Phytoplankton → Submerged plant stage →Submerged free-floating plant stage→ Reed- swamp → Marsh- Meadow → Scrub → Forest stage  | $\frac{1}{2} * 2$<br><br>1                 | 2 |
| Part III A |    | Answer any 3 questions from 14 – 17. Each carries 3 marks   |  |   |
|            | 14 | (a) D – Mortality. E- Emigration<br>(b) Natality & Immigration  | $\frac{3}{4} * 2$<br><br>$\frac{3}{4} * 2$ | 3 |
|            | 15 | (a) Global warming<br>(b) Affects weather & climate ( El Nino effect) , Melting of polar ice caps & Himalayan snow caps over many years leads to rise in sea level , Affect crop productivity, Risks for human health ( cause various diseases), Wildlife extinction, More acidic oceans , floods, drought etc<br>(Any 2 responses)     | 1<br><br>1+1                               | 3 |
|            | 16 | Pyramid of biomass<br><br>Here biomass of primary producers (phytoplanktons) is much less than primary consumers (zooplanktons)   | 1<br><br>2                                 | 3 |
|            | 17 | cry gene<br><br>When an insect ingest the inactive toxin, it is converted into an active toxin due to the alkaline pH of the gut which solubilise the crystals.<br>The activated toxin binds to the surface of midgut epithelial cells and create pores that cause cell swelling and lysis and eventually leads to death of the insect. | 1<br><br>2                                 | 3 |
| Part III B |    | Answer the following questions. carries 3 marks   |  |   |
|            | 18 | (a) Proper maintenance of vehicles , Use of low-sulphur petrol & diesel , Use of catalytic converter , Implement  | $\frac{1}{2} * 4$                          | 3 |

|           |    |   |   |   |
|-----------|----|---|---|---|
|           |    | new auto fuel policy , Use of CNG ,Use of unleaded petrol etc. (Any 4 points)<br>(b) Compressed Natural Gas   | 1   |   |
| Part Iv A |    | Answer any 1 question from 19 - 20 . carries 5 marks  |   |   |
|           | 19 | (a) Gel electrophoresis<br>(b) Separated DNA fragments can be visualised after staining with Ethidium bomide followed by exposure to UV light<br>(c) Separated bands of DNA are cut out from the agarose gel and extracted from gel piece.  | 1<br>2<br>2   | 5 |
|           | 20 | a- Synergids<br>b- Secondary nucleus / Polar nucleus<br>c- Antipodals<br>d- Filiform apparatus<br><br>Syngamy & Triple fusion together known as Double fertilization<br><br>Or<br><br>One male gamete fused with egg to form zygote & another male gamete fused with secondary nucleus or polar nucleus to form primary endosperm nucleus<br><br>Zygote – Diploid (2n) , PEN – Triploid (3n)<br><br>(Equation of syngamy & triple fusion with ploidy give 3 score)<br><br>Syngamy :- Male gamete (n) + female gamete/egg cell (n)<br>→Zygote (2n)<br><br>Triple fusion :- Male gamete (n) + Secondary nucleus(2n) → PEN (3n) → Endosperm (3n) | $\frac{1}{2} * 4$<br><br>2<br><br>$\frac{1}{2} * 2$ | 5 |