

Q-1. A) Fill in the blank.

a) Celsius b) 21 c) Green d) Adsorption e) Centrifuge

Q-1-B) Match the column & rewrite

a) Millimeter - iii) 0.001m

b) Kelvinscale i) K

c) AFP's (iv) Cryoprotective proteins

d) Dr. Ian Wilmut (v) Cloned Dolly

e) Combined glass electrode (ii) pH meter

Q1. c) State True/False -

a) - Pictograms - True b) Embryonic Stem cell - False

c) Retrovirus - False d) Simple microscope - True

e) Solute travelling - True

Q-1. D) Answer in one sentence -

a) List of oxidizing agents - Nitrate, Nitrites, chlorate ~~chlorites~~ chlorites, hypochlorites, Chromates/Molybdates, HNO_3 Permanganate, etc (any - 4)

b) Variable - definition - w.r.t. Population a character expressed numerically & varies from object to object.

c) Jayanti Rohu - Genetically improved rohu introduced in 5 rivers of India on Swarnajayanti - a First international carp project.

d) Chimeric DNA - DNA made up of 2 different species.

e) Electrophoresis - Separation of charged molecules through inert, porous support material by applying an electrical field.

Q.2. A) Good Laboratory practices - Any 5 points elaborated out of 19 points explained in University Text book. 2 Marks/point.
eg - Use of gloves, head capped, cotton apron etc

OR

Q.2-A) Probability Sampling introduction - 1 MK.
out of 4 types - Simple random - replacement & without replacement method (3 MKs) and systematic, stratified and cluster sampling methods 2 MKs each.

Q.2 B) Explain any 2 :-

a) Preparation of cumulative frequency steps - 2 MK, Table drawn - 5 MK, example - 3 MK

b) Subdivided bar diagram - example - 2 MK, Tabular presentation - 3, Diagram - 5 MK

c) Median for ungrouped data - Definition & Median - with even and odd number (2), explanation and example - even - 4 MK and odd - 4 MK.

d) Toxic - explanation 3 + Diag - 2 MK, Corrosive - explanation 3 MK (including safety measures) diagram 2 MK

Toxic - teratogenic - eg - Ninhydrin 2 dia, Corrosive - acids, effects, nature - combustible -

Q.3 - A) Achievement of biotechnology in animal husbandry -
Eg - Milk & wool yield, increased growth rate, disease resistance, Herman bull, Silkworm races & its DNA finger printing - 2 MK per example.

OR

A) DNA technique of Fingerprinting :- RFLP method flow chart - 8 steps - 1 MK/step (8 MK), explanation - 2 Marks

B) S.N. any 2 -

a) In vivo gene therapy for cystic fibrosis - explanation - In vivo gene therapy - 1 MK, Diag - 2 MK explanation of cystic fibrosis - 2 MK

b) Fermentation - eg - bread, yogurt, Baker's yeast - 2 MK
Pharmaceuticals - eg - Insulin, Merck - Gardasil, HPV - 3 MK

c) Retrovirus Vector method - Diag - 3 MK, Explanation - 2 MK

d) Recombinant DNA medicine - eg - Insulin - diag - 2 MK, explanation 3 MK

Q.4. Answer any 2 -

- Principle of dissecting microscope - 4MK, construction of it - 2MK, application 4MK
- Principle of chromatography - 4MK, Types - Adsorption, TLC, Partition, Paper - each type 2MK each.
- Principle - electrophoresis - 5_{MK}, Types - 2MK, Diagram of type - 3MK
- Principle of pH meter - 4marks, application any 3 points out of 8 points - 6 Marks

Q.5. Write S.N. on any 4

- Fahrenheit and Kelvin scale - explanation - 2 each and example - $\frac{1}{2}$ each.
- Normality - definition - 1MK, Formula - ~~1~~ MK, explanation 2MK with example - 1MK
- Cloning of Dolly - Dia - 3MK + explanation - 2MK
- Ex vivo gene therapy - Diagram - 3MK + explanation 2MK
- Application of colorimetry - any 4 applications - 5MK
- Principle of centrifuge - Formula - centrifugal force - ~~1~~ Mark, explanation - 4MK