

**Model Answers for Subject code: 81136 and Q.P. Code: 30061**

**Q1) A) Fill in the blanks**

**(5marks)**

- a) flammable
- b) Jayanti rohu
- c) electrophoresis
- d)  $273.16^{\circ}$
- e) chymosin

**Q1 B) Match the columns I and II and rewrite:**

**(5marks)**

Column I

Column II

- |                         |                                    |
|-------------------------|------------------------------------|
| a) Oxidizing agent      | v) permanganate                    |
| b) Dolly                | iv) Ian Wilmut                     |
| c) Alcohol fermentation | i) <i>Saccharomyces cerevisiae</i> |
| d) TLC                  | ii) Adsorption chromatography      |
| e) Explosive            | iii) Sodium                        |

**Q1 C) State whether true or false.**

**(5marks)**

- a) False
- b) True
- c) True
- d) True
- e) False

**Q1D) Answer the following in one sentence:**

**(5marks)**

- a) pH is the negative logarithm of hydrogen ion concentration.
- b) The ability to distinguish between separations of smaller objects within the object being studied is called the resolving power.
- c) Substances that contains oxygen and halogens, and are capable of supporting combustion and intensify the violence of fire.
- d) Molality is defined as the gram molecular weight of solute dissolved in one kilogram of solvent.
- e) French Anderson is known as the father of gene therapy.

**Q2 A) What is a frequency distribution table? Explain the steps involved in its preparation.**

**Answer:**

Brief introduction of concept of frequency distribution table. (2 marks)

Description of steps involved for frequency distribution table, including examples, table and histogram. (8 marks)

**Q2 A) What is a median? Explain the calculation of median for ungrouped and grouped data.**

**Answer:**

Brief description of median. (2 marks)

Description of calculation of median of ungrouped data. (4 marks)

Description of calculation of median of grouped data. (4 marks)

**Q2 B) Write note on any two from the following:**

**a. Good Laboratory Practices.**

**Answer:**

Brief description of Good Laboratory Practices (GLP). (1 marks)

Description of GLP by national and international agencies. (4 marks)

**b. Percentage concentration.**

**Answer:**

Brief description of Percentage concentration. (1 marks)

Description of percentage by weight and percentage by volume. (4 marks)

**c. Pie diagram.**

**Answer:**

Brief description of pie diagram (1 mark)

Description of construction of pie diagram with example and diagram (4 marks)

**d. Simple random and systematic sampling methods.**

**Answer:**

Brief description of the concept of sampling (1 marks)

Description of Simple random and systematic sampling methods. (4 marks)

**Q.3 A) Describe the production of recombinant insulin.**

**Answer:**

Brief introduction in importance of insulin, the disease related to deficiency of insulin. (2 marks)

Description of the technique used for preparation of recombinant insulin along with diagram. (8 marks)

**OR**

**Q.3 A) Describe SCID and Its treatment.**

**Answer:**

Brief description of SCID. (2 marks)

Description of *ex-vivo* gene therapy for treatment of SCID with diagram. (8 marks)

**Q.3 B) Write short notes on any two of the following:**

**a. *In-vivo* gene therapy.**

**Answer:**

Description of *in-vivo* gene therapy. (2 marks)

Description of example(s) and/or diagram. (3 marks)

**b. Achievements of biotechnology in medicine.**

**Answer:**

Description of achievements in medical biotechnology including biomarkers, genetics, gene therapy, vaccination, stem cell technology, human genome project. (Student may give additional examples) (2 marks)

**c. Transgenesis using nuclear transplant method.**

**Answer:**

Description of the technique of nuclear transplant method including diagram (5 marks)

**d. Green fluorescent protein.**

**Answer:**

Brief introduction on Green fluorescent protein (2 marks)

Applications of Green fluorescent protein (3 marks)

**Q.4 Answer any two from the following:**

**a. Describe the construction and applications of dissecting microscope.**

**Answer:**

Description of construction of dissecting microscope with diagram. (6 marks)

Description of applications of dissecting microscope. (4 marks)

**b. Explain the principle and applications of pH meter.**

**Answer:**

Principle of pH meter with diagram. (6 marks)

Description of applications of pH meter. (4 marks)

**c. Explain the principle and applications of spectrophotometry.**

**Answer:**

Description of principle of spectrophotometer with diagram. (6 marks)

Description of applications of spectrophotometer. (4 marks)

**d. Explain the principle of centrifugation and write note on ultra-centrifugation.**

**Answer:**

Description of principle of centrifugation (6 marks)

Description and working of ultra-centrifuge (4 marks)

**Q.5 Write short notes on any four**

**a. Corrosive chemicals.**

**Answer:**

Description of corrosive chemicals with examples. (4 marks)

Pictogram of corrosive chemicals. (1 mark)

**b. Molarity.**

**Answer:**

Description of molarity with examples. (5 marks)

**c. Achievements of biotechnology in animal husbandry.**

**Answer:**

Description on achievements of biotechnology in animal husbandry. (5 marks)

**d. DNA Finger printing technique.**

**Answer:**

Brief description on the technique of DNA fingerprinting with diagram. (5 mark)

**e. Paper chromatography.**

**Answer:**

Description of principle and working of paper chromatography with diagram. (5 marks)

**f. Agarose gel electrophoresis.**

**Answer:**

Description of principle of electrophoresis and working of agarose gel electrophoresis. (5 marks)

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