[203] SEAT No._____ No. of printed pages:02

SARDAR PATEL UNIVERSITY

M.Sc. (Integrated) Biotechnology-Semester VI Examination
Tuesday, 26th March, 2019
2:00pm to 5:00pm
PS06CIGB04: BIOSENSORS AND BIOCRYSTALLOGRAPHY

Total marks: 70

Q.1 Multiple choice questions **[08]**

i) Thermocouple sensor is_____ sensor.
(a) Thermal-electrical (b) Chemical-thermal
(c) Thermal- mechanical (d) Electro-mechanical

ii) _____ is a device that transfers power from one system to another in the same or in the different form.
(a) Battery (b) Voltmeter (c) Multimeter (d) Transducer

iii) Which of the following is the first generation biosensor?
(a) Glucose (b) Urea (c) Alcohol (d) Choline

iv) Who is the father of Biosensor?
(a)Verneuil (b) Albert (c)Leland C Clark (d) Francis Galton

v) In which immobilization technique, the biomolecules are trapped within the gel matrix?
(a) Adsorption (b)Entrapment (c) Cross linking (d) Covalent binding

vi) The bond formed between two atoms is due to redistribution or regrouping of ____
(a) Proton (b) Neutron (c) Electron (d) Photon

vii) Which of the following is/are the diffraction method?
(a) Laue (b) Weissenberg (c) Rotation (d) all of these

viii) _____ is considered for optical characterization.
(a) Chemical (b) Refractive index (c) Safety (d) Toxicity

Q.2 Short Answer Questions. (Attempt any Seven) **[14]**

i) Which are the different criteria to classify sensors?
ii) Write the basic principle of thermometric sensor.
iii) Write about the Glucose Biosensor.
iv) Give the applications of biosensor in industry.
v) Mention about the structure of atom.
vi) Enlist the factors affecting the process of protein crystallization.
vii) List out the physical properties of organic compounds.
viii) Give the applications of X-rays
ix) Mention the name of various crystal systems.

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Q.3 a) Give an account on static characteristics of sensors. [06]

b) Explain in detail about electrical characterization of sensors. [06]

OR

b) Discuss in detail mechanical & thermal characterization of sensor. [06]

Q.4 a) Enlist the various types of Biosensor. Explain any two in detail. [06]

b) Discuss in detail the choice of bioreceptors during construction of biosensor. [06]

OR

b) Explain any three methods of immobilization. [06]

Q.5 a) Enlist different crystal growth techniques. Explain any two in detail. [06]

b) Give an account on principle of protein crystallization. [06]

OR

b) Write short note on nature of biological compounds. [06]

Q 6 a) Describe the production of X-rays using Coolidge tube. List its advantages and disadvantages. [06]

b) Explain in detail Bragg's law. State the properties of X-rays. [06]

OR

b) Discuss in detail rotating crystal method for determination of crystal structure. [06]

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