Bajaj College of Science, Wardha

B.Sc. IV

Subject: Biotechnology

Practice Sheet During Lockdown

(Immunology and Biophysical Techniques II)

Unit I (Immune System, Organs and Cells of Immune System)

A] 7 marks questions:

Q1. Describe in detail structure and function of various cells of immune system.

Q2. Describe in detail structure and function of various organs of immune system.

Q3. Describe in detail structure and function primary lymphoid organs.

Q4. Describe in detail structure and function of various cells and organs of immune system.

Q5. Describe in detail structure and function secondary lymphoid organs.

Q6. Write a detail note on Innate Immunity.

Q7. Write a detail note on acquired immunity.

Q8. Explain in detail mechanism of Innate Immunity .

Q9. Explain in detail mechanism of acquired immunity.

Q10.What is Antigen? Explain in detail factors affecting antigenecity.

Q11.Describe in detail Humoral immunity.

Q12 Describe in detail main pathways of complement system.

Q13.Write a detail note on Vaccination.

Q14.Explain in detail concept of autoimmunity.

B] 2 marks questions:

1.What is Lymphatic system?

2. Give two functions of NK cell.

3. What is immunity?

4. What is innate immunity?

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5. What is acquired immunity?

6. What is Hematopoiesis ?

7. What is passive acquired immunity?

8. Give two main functions of thymus.

9. What are lymph nodes?

10. What is inflammation?

11.What is antigen and antigenicity?

12. What is herd immunity?

13.What is vaccines?

14. What is autoimmunity?

UNIT II (Antibody Structure and Classes)

A] 7 marks questions:

Q1. What are immunoglobulin's ? Give the structure and classes of antibody.

Q2. What is cell mediated immunity? Describe in detail NK cell mediated immunity.

Q3. Give in detail general features of hypersensitivity.

Q4. Discuss the importance of vaccination .

Q5. What is hypersensitivity? Describe different types of hypersensitivity.

Q6. Describe in detail structure of antibody.

Q7. Describe in detail cell mediated immunity and explain in detail ADCC.

Q8. Write a detail note on MHC molecule.

Q9. Explain in detail type I hypersensitivity.

Q10. Explain in detail TC mediated immunity.

Q11. Explain in detail delayed type hypersensitivity.

Q12. Explain Type-III hypersensitivity.

Q13. Describe Anaphylaxis reaction.

Q14. Discuss Live and Killed vaccines with examples.

B] 2 marks questions:

Q1. What is ADCC?

Q2. What is TLR?

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Q3. Give any two examples of cytokines.

Q4. Name the scientist who developed vaccine against smallpox.

Q5. Name the cell involved in type IV hypersensitivity reaction.

Q6. What is PAMP?

Q7. What are NK cells?

Q8. What are cytokines?

Q9. Define antigen and antibody.

Q10. Give the different classes of antibody.

Q11**.**Which class of antibody can cross the placenta?

Q12. Which is the most efficient complement fixing class of antibody?

Unit III (Immunological Techniques)

A] 7 marks questions :

Q1. Explain in detail the antigen- antibody reactions.

Q2. Write a detail note on Precipitation and agglutination reactions.

Q3. Describe in detail ELISA technique.

Q4. Discuss in detail Radial Immuno Diffusion (RID).

Q5.Explain in detail hybridoma technology.

Q6.what are monoclonal antibodies? Give its application in immunodiagnostic.

Q7.Explain in detail production of monoclonal antibodies.

Q8. Write a detail note on complement fixation and Immunodiffusion.

Q9. What are serological reactions? Explain with suitable examples.

B] 2 marks questions :

Q1. What is antigen- antibody reaction?

Q2.What is precipitation?

Q3. What is agglutination?

Q4. What is complement fixation?

Q5. What is immunodiffusion?

Q6.Give any two application of monoclonal antibody.

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Q7.What is hybridoma technology?

Q8.Define monoclonal antibody.

Q9.What are polyclonal antibodies?

Q10.Give the major difference between monoclonal and polyclonal antibody.

Q11.Who developed hybridoma technology?

Q12.What is the role of HAT medium in hybridoma technology?

Q13.How the hybridomas are produced?

Unit IV (Gel Electrophoresis)

A] 7 marks questions:

Q1. Explain in detail various types of gel electrophoresis.

Q2. Describe principle and process of gel electrophoresis.

Q3. Describe different factors affecting electrophoresis mobility.

Q4. Discuss in detail High voltage electrophoresis.

Q5. Give the principle and procedure of paper electrophoresis.

Q6. Write a detail note on cellulose acetate electrophoresis.

Q7.Discuss various detection techniques

Q8. Write a detail notes used in gel electrophoresis.

Q9. Discuss how detection, recovery and Eestimation of macromolecules is carried out?

Q10.Discuss in detail various solubilizers, Column and slab gels used in gel electrophoresis.

B] 2 marks questions:

1. What is electrophoretic run?

2. Differentiate slab gel and column gel.

3. Give any two advantages of gel electrophoresis.

4. Give any two applications of paper electrophoresis.

5. What are solubilizers ?

6. Name the tracking dye used in electrophoresis.

7. What is High Voltage Electrophoresis ?

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8. What is Electrophoretic Mobility?

9. Name the factors affecting electrophoretic mobility.

10. What is Rf Value?

11.What does the electrophoresis apparatus consists of?

12. How DNA will migrate in electrophoresis ?

Unit V (Centrifugation)

A] 7 marks questions:

Q1. Describe in detail Principle and working of SDS – PAGE Electrophoresis.

Q2. Describe in detail the application of SDS-PAGE.

Q 3. Describe pulsed field gel electrophoresis.

Q4. Discuss in detail principle and application of Isoelectric focusing.

Q5 Describe the principle and application of analytical centrifugation.

Q6. Write a detail note on different type of centrifuge.

Q7. Describe in detail principle and application of Density Gradient Centrifugation.

Q8. Describe in detail principle and application of Ultracentrifuge.

Q9. Write notes on:

(a) Sedimentation coefficient.

(b) RCF

(C) Continuous centrifuge

Q10. Describe in detail principle and application of Differential centrifuge

B] 2 marks questions:

1. What is role of SDS in electrophoresis.

2. Define RCF.

3. What is sedimentation coefficient?

4. Give any two application of SDS-PAGE.

5. What is isoelectric point?

6. What is range of voltage and time used in Pulsed-field gel electrophoresis ?

7. Give any two application of Density Gradient Centrifugation.

8. Give any two application of Differential Centrifugation.

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9. Give the applications of pulsed-field gel electrophoresis.

10. Give the principle of centrifugation.

11. Which type of centrifugation is used to separate organelles from cell?

12.Name the agent which is used as a media for density gradient?

Unit VI (Isotopic Tracer Technique)

A] 7 marks questions:

Q1. Discuss the role of isotopic tracer technique in metabolic studies.

Q2. Explain the principle, instrumentation and procedure of Scintillation counting.

Q3. Describe Geiger-Muller Counter in detail..

Q4. Describe solid and liquid Scintillation counters.

Q5. Explain falling drop method for deuterium measurement.

Q6. Describe Principle of tracer technique. Add a note on its advantages and limitations.

Q7. Describe in detail mass spectrometry.

Q8. What are Different applications of isotopes in biotechnology?

Q9. Write a detail notes on Measurement of radioactivity.

Q10 Describe in detail principle and application of Mass spectrometry.

Q11.Discuss in detail radioactive, stable isotopes and rate of radioactive decay.

B] 2 marks questions:

1.Name any two stable isotopes used in biology.

2.What is autoradiography ?

3. What is Cerenkov radiation?

4. What is dead time in GM counter ?

5. What is falling drop method?

6. What are ionization chambers?

7. Give the major difference between stable and radioactive isotopes.

8. Give the application of isotopes in biotechnology.

9. What type of isotopes are termed as radioactive isotopes?

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10. What is the half life of an isotopes?

11.What is the unit of radioactivity?

12.Who discovered the phenomenon of radioactivity?

For any queries, feel free to contact us on ulka9malode@gmail.com

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