KALOJI NARAYANA RAO UNIVERSITY OF HEALTH SCIENCES

WARANGAL, TELANGANA STATE – 506 007

1st M.B.B.S. EXAMINATIONS (NEW REGULATION) – NOVEMBER 2020

BIOCHEMISTRY PAPER – I

Time: 3 Hours **Max Marks:** 100

Note: Answer all questions. Give Diagrammatic representation wherever necessary.

Long Answer Questions (2 X 15 = 30)

1. A 70-year-old woman was admitted with severe congestive cardiac failure. She has been unwell for about a week and was not on any medication. On examination, she was hyperventilating and was very distressed. She was on an oxygen mask. Admission biochemistry investigations are listed below: pH-7.58, HCO_3^--19mmol/L, pCO_2-21mm Hg, pO_2-154 mm Hg
    - i. What are the critical course of events that will alter her acid-base status?
    - ii. What acid-base abnormalities would you expect in her based on the above information?
    - iii. Discuss the compensatory mechanisms which will take place in this patient.
    - iv. Will electrolyte analysis help in this patient? If yes, how?
    - v. Which sample is sent for analysis of the blood gases? Name the precautions which need to be taken during collection and transport of the sample.
2. What are isoenzymes? What are the different ways in which isoenzymes can be identified? Discuss the clinical importance of isoenzymes of creatine kinase (CK) and lactate dehydrogenase (LDH).

Short Answer Questions (8x5=40)

3. Explain the electron transport chain. Mention the sites of ATP synthesis. Add a note on inhibitors of oxidative phosphorylation.
4. Enumerate the gluconeogenic substrates and describe the reactions of gluconeogenesis.
5. Describe the formation and fate of ketone bodies. Add a note on ketosis.
6. Using a neat and labelled diagram explain the fluid mosaic model of the cell membrane. Discuss the importance of membrane lipids.
7. What are lipoproteins? Discuss the functions of different lipoprotein fractions obtained on electrophoresis.
8. Classify hormones based on the chemical nature. Discuss in detail the mechanism of action of steroid hormones.
9. What do you understand by phase-2 reactions of detoxification? Explain the concept using an example of bilirubin.
10. What are mucopolysaccharides? Discuss the different types along with their chemistry and function.

Very Short Answer Questions (10X3=30)

11. Importance of carnitine shuttle pathway.
12. Hypersensitivity reactions.
13. Write in brief about the therapeutic utility of enzymes with examples.
14. What are normal levels of serum electrolytes? List out a few causes of hyperkalemia.
15. Oxidative stress and its effects.
16. Significance of uronic acid pathway.
17. Chemistry and functions of Cholesterol.
18. Explain the triple helical structure of a collagen molecule.

19. What are the principles of photometry? Define them.

20. What is plasma osmolality? Mention its clinical importance.

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