**Rajiv Gandhi University of Health Sciences, Karnataka**

**MBBS Phase – I Degree Examination**

**Biochemistry -Model Paper II**

**QP Code-**

**Max Marks: 100 Marks Time - 3 hrs**

**Answer all questions. Draw diagrams wherever necessary**

1. **Long essays 2X10= 20 marks**
2. A 14 year old male presented with one week history of episodic severe abdominal pain associated with vomiting 3 to 4 times a day and dark reddish urine. In the past, he had 2 episodes of similar abdominal pain along with altered sensorium and generalized epileptic for which he was on treatment. General physical examination and neurological and abdominal examination was unremarkable. Laboratory investigations showed hemoglobin of 11 gm% and urine was strongly positive for porphobilinogen. Peripheral smear showed microcytic hypochromic anemia. (1+3+6=10 marks)

a. Suggest the probable diagnosis?

b. What is the biochemical basis for the above-mentioned laboratory findings.

c. Explain the pathway implicated in this condition

2. Explain any five liver function tests with their clinical interpretation.

**II**. **Short essays** **10X5= 50 marks**

1. Classify proteins based on their functions with suitable examples
2. An 81-year-old woman presented with fatigue and was found to have anemia. In fact, she had some pancytopenia. She had low neutrophils, she had low platelets, she had some anemia, and then she was found to have a monoclonal protein. On x-rays, she was found to have bone lesions and advanced bone disease, and she was found to have an elevation in her creatinine with a lower creatinine clearance. Based on the clinical and laboratory evaluation it was diagnosed as paraproteinemia.
3. Explain the biochemical evaluation of this case with their clinical interpretation.
4. List the various immunoglobulins and their functions.
5. A10-day old neonate was brought to hospital with complaints of feeding intolerance, emesis, strong body odour and convulsions. Laboratory tests revealed elevated serum ammonia and citrulline with no acidosis. Based on the presentation and laboratory evaluation doctor advised arginine for treatment following which the baby’s condition improved
6. Mention the diagnosis with the defective enzyme.
7. Explain the biochemical basis for the treatment given.
8. Write the steps of the pathway implicated. (1+1+3)
9. Mention four specialized compounds formed from glycine and their significance (1+4).
10. Explain the Watson crick model of DNA with neat labelled diagram.
11. Enumerate the steps of purine nucleotide degradation.
12. Explain the sources of various atoms of purine and pyrimidine rings with illustrations.
13. List the various DNA repair mechanism and explain any two (1+2+2)
14. Define translation. Explain the post translational modifications. (1+4)
15. Classify tumor markers with examples and their clinical significance.
16. **Write Short answers. 10x3= 30 marks**
17. Write the steps of southern blot technique
18. Mention six applications of Recombinant DNA technology in medicine
19. Define transamination reaction with suitable example and write its significance.
20. What is point mutation? Give an example of missense mutation and its consequence
21. Write the mechanism of action of Reverse transcriptase and state its significance
22. Enumerate the Tubular function tests of kidney and explain the dilution test
23. Describe the Lac operon concept.
24. Enumerate the steps of lipid peroxidation
25. Mention any three Antioxidant enzymes and write their significance.
26. Mention any three biologically important peptides and write their functions.