QP CODE : 1025

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 06-May-2023

Time: Three Hours **Max. Marks: 100 Marks**

BIOCHEMISTRY – PAPER II (RS-4)

Q.P. CODE: 1025

(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A patient who was suffering with pain abdomen and passing clay coloured stools came to medical OPD for treatment. On examination there was yellowish discoloration of sclera. Following investigations a diagnosis of obstructive jaundice was made.
    a. Explain the formation and fate of bilirubin
    b. Name two causes of obstructive jaundice
    c. Write the serum and urinary findings in obstructive jaundice

2. What is semiconservative replication? In which phase of cell cycle replication takes place? Describe replication in prokaryotes with neatly labelled diagram.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 7 year old boy presented with oedema and passing frothy urine. Investigation revealed severe proteinuria.
    a. What is the normal plasma level of total proteins and albumin?
    b. Name two other disorders associated with hypoalbuminemia
    c. Mention the functions of albumin.

4. A child was rushed to the emergency ward with altered sensorium. On examination, the child was found to be in semi comatose stage. Investigations revealed high blood ammonia levels and the case was suspected to be urea cycle disorder.
    a. Explain urea cycle
    b. Mention any two disorders of urea cycle with its enzyme defect

5. Explain tertiary structure of proteins. List the forces maintaining tertiary structure.
6. What is polymerase chain reaction (PCR)? Describe the steps involved in PCR.
7. Enumerate five transmethylation reactions and mention their significance.

8. Describe the structure of immunoglobulins. Name any two classes of immunoglobulins and write their functions.

9. What are nucleotides? Name any four biological important nucleotides and write their importance.

10. List various reactive oxygen species. Describe the damages produced by reactive oxygen species.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Name blotting techniques. Write the applications of each technique.

12. Draw purine ring and indicate the sources of carbon and nitrogen in the purine ring.

13. What are proto-oncogenes? How are they activated?
14. Mention the vectors used in Recombinant DNA technology and write their importance.
15. Write van den Bergh test and its interpretation in Hepatic Jaundice.
16. What are growth factors? Give two examples.
17. Write three detoxification reactions by conjugation mechanism.
18. Mention the advantages of automation in clinical biochemistry laboratory.
19. Write three reactions of purine salvage pathway.

20. What are Thalasemias? What are the defects in Alpha and Beta Thalasemias?

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Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Drug which inhibits xanthine oxidase is
- A. Allopurinol
- B. Aspirin
- C. Colchicine
- D. Probenicid

21 ii) Hypoalbuminemia is **not seen in**
- A. Chronic liver disease
- B. Nephrotic syndrome
- C. Hemoconcentration
- D. Protein energy malnutrition

21 iii) Which of the following is an inhibitor of RNA synthesis?
- A. Rifampicin
- B. Ciprofloxacin
- C. Novobiocin
- D. Adraiamycin

21 iv) Which of the following is an example for sulphur containing amino acid?
- A. Phenylalanine
- B. Glycine
- C. Threonine
- D. Cysteine

21 v) Which of the following is purely Ketogenic amino acid?
- A. Proline
- B. Glycine
- C. Alanine
- D. Leucine

22 i) In DNA number of hydrogen bonds between Guanine and Cytosine is
- A. One
- B. Two
- C. Three
- D. Four

22 ii) Tumor marker for colorectal cancer is
- A. Carcinoembryonic antigen (CEA)
- B. Alpha-fetoprotein
- C. Calcitonin
- D. -HCG

22 iii) Nitrogen atoms of urea are derived from ammonia and
- A. Aspartic acid
- B. Alanine
- C. Histidine
- D. Valine

22 iv) Normal value of plasma osmolality is
- A. 185 to 200 milliosm/kg
- B. 285 to 300 milliosm/kg
- C. 385 to 400 milliosm/kg

D. 485 to 500 milliosm/kg

22 v) Reproducibility of results is best described as:

A. Sensitivity
B. Specificity
C. Precision
D. Accuracy

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