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RUHS

First Year MBBS Examination

I MBBS BIOCHEMISTRY PAPER II

Date: 04-07-2021

Max Marks: 100

Time: 3 hours

Instructions: INSTRUCTIONS: Attempt all questions in both sections: (Use separate answer book for each section)

Section 1

1. Fill in the blanks: (6)

a. The respiratory quotient for protein is _____

b. The exogenous substance used to measure glomerular filtration rate (GFR) is _____

c. The enzyme protects DNA from aging is _____

d. Sickle-cell anemia is a classical examples of _____ mutation.

e. The primary transcript produced by RNA polymerase II in eukaryotes is _____

f. The immunoglobin that can find mast cells and

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release of histamine and slow reacting substance is,_____

2. Choose the correct option in the following multiple choice questions: (4)

a. Northern blotting techniques is for detection of:
   - a) Protein
   - b) DNA
   - c) RNA
   - d) All

b. Alpha-fetoprotein level is serum is increased in:
   - a) Prostate cancer
   - b) Hematoma
   - c) Ovarian cancer
   - d) Choriocarcinoma

c. Which mineral is essential for normal maturation of collagen?
   - a) Taq polymerase
   - b) Restriction Endonuclease
   - c) Reverse transcriptase
   - d) Telomerase

d. Superoxide radicals can be detoxified by,
   - a) Cytochrome c
   - b) Cytochrome b
   - c) Cytochrome a
   - d) None

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3. A 40 year old man was brought to the hospital with mid Epigastric pain/fever and vomiting after cating 'greasy meals'. His stools were clay in colour and contained (15) fat. The man's urine was found to be dark in colour. Laboratory finding shows serum bilirubin was 14 mg/dl and the urine gave a positive test for bile salt.

a. What is the likely diagnosis of the patient?
b. Explain the rationale behind diagnosis.
c. Which type of bilirubin is high in this disease?
d. What are the causes for this disease?
e. What is the clinical management for this disease?

4. Write short notes on (10)

a. Significance of reverse cholesterol transport
b. Effect of hyperglycemia on sorbitol pathway
c. Regulation of heme synthesis
d. Metabolic acidosis
e. Metabolic adaptation in the starvation
f. Salvage pathway of purine synthesis (A.393)

5. Explain briefly (15)

a. Ketogenesis and its regulation (A.295)
b. Biogenic amines
c. Vitamins as coenzymes

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d. Electron transport chain

Section 2

6. Describe hormonal regulation of blood glucose levels. What are the metabolic derangements in diabetes mellitus? Add a note on Glycated hemoglobin (HbA1c) and (20) its clinical significance.

7. Explain why (any five) (10)

a. Methotrexate acts as a competitive inhibitor.
b. Glutathione acts as a biology active peptide.
c. Ammonia is toxic (A.336)
d. Fluoride acts as a in inhibitor of glucolysis.
e. G6PD deficiency causes a drug induced hemolytic anemia
f. Patients with Alkaptonuria develop Ochronosis

8. Explain briefly (20)

a. Erythropoietic Porphyrias
b. Isoenzymes in clinical diagnosis (A.114)
c. Phenylketonuria (A.352)
d. Disorders of iron metabolism
e. Fatty liver and lipotropic factors (A. 324)

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