001/22

The West Bengal University of Health Sciences
MBBS 1st Professional Examination (New Regulation), February - March 2022

Subject: Biochemistry
Paper : I

Full Marks : 100
Time : 3 hours

*Attempt **all** questions. The figures in the margin indicate full marks.*

1. a) A 5 year old child came to pediatric OPD with complaints of swelling around the eyes and both legs and generalized body swelling for last 2 weeks. The mother complained that there was diminished urine output along with passage of frothy urine for same duration. On examination: pedal edema+++ Laboratory examination showed: Serum albumin 2.9 g/dl and total cholesterol 348 mg/dl and total urinary protein 2.8g/day.
(urinary protein dipstix=+++)
What is your provisional diagnosis?
Enumerate five plasma proteins and write down their major functions.
What are the acute phase proteins ? 5+5+5
b) Define Lipids. Classify them with examples. Describe the structure and function of Lipoproteins. Explain the VLDL metabolism in our body. Add a note on dyslipidemia. 1+4+4+4+2

2. a) Explain why people suffer from fasting hypoglycaemia in Von Gierke's disease. Describe how glycogen metabolism differs in skeletal muscles and liver. 4+6
b) Write down the steps of heme synthesis. Add a note on various porphyrias. 4+6
c) What are ketone bodies? How are they formed in the body? Describe the role of ketone bodies in starvation and in severe uncontrolled Diabetes Mellitus. 2+4+4

3. Write short notes on the following: 2x5
a) Discuss briefly the professional qualities a doctor should possess.
b) Oxygen dissociation curve.

4. Explain the following statements: 5x4
a) Serum creatinine is more specific than plasma urea for assessing kidney function.
b) Brown adipose tissue promotes thermogenesis.
c) 2,4 dinitrophenol functions as an uncoupler of the respiratory chain.
d) Sudden infant death syndrome is seen in defects of beta oxidation.
e) The mode of action of metalloenzymes and metal activated enzymes are different.

5. Choose the correct option for each of the following: 10x1
i) Cell communicate with each other through all of the following except:
a) Desmosomes
b) Gap junctions
c) Ion channels
d) Tight junctions.

ii) The two nitrogen atoms in urea arise from:
a) Ammonia and glutamine.
b) Glutamine and aspartic acid.
c) Glutamine and glutamic acid.
d) Ammonia and aspartic acid.

iii) Glycocalyx present in the:
a) Nucleus.
b) Cell surface.
c) Ribosomes.
d) Golgi complex.

iv) The following phospholipid is involved in blood clotting:
a) Lecithin.
b) Cardiolipin.
c) Plasmalogen.
d) Cephalin.

v) Identify the co-enzyme required by ALA synthase in biosynthesis of porphyrins:
a) FAD
b) NAD.
c) FMN.
d) Vitamin B6.

vi) Which enzyme does NOT have copper as coenzyme ?
a) Cytochrome oxidase.
b) Xanthine oxidase.
c) Superoxide dismutase.
d) Tyrosinase.

vii) Methotrexate a widely used anticancer drug acts by inhibiting
a) Xanthine oxidase.
b) Thymidylate synthase.
c) Dihydrofolate reductase.
d) Phosphoribosy1 pyrophosphate synthatase.

viii) Maple syrup urine disease may be caused by deficiency of :
a) Branched chain α-keto acid dehydrogranase.
b) Pyruvate dehydrogenase complex.
c) Tyrosinase.
d) Aldolase.

ix) Uncontrolled cell growth may be a sequel to :
a) Decreased telomerase activity.
b) Increased telomerase activity.
c) Decreased topoisomerase activity.
d) Increased topoisomerase activity.

x) Prostanoids include all except:
a) Prostacyclins.
b) Lipoxins .
c) Thromboxanes.
d) Prostaglandin G_2