Q.P. Code: 126007 **Reg. No.:……**

First Professional BUMS Degree Supplementary Examinations
December 2024
Munafeul Aza – Paper I
(2022 Scheme)

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

- ***Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space***
- ***Answer all parts of a single question together • Leave sufficient space between answers***

1. **Multiple Choice Questions** **(20x1=20)**

The Answers to MCQ questions (Q.No.i to Q.No.xx) shall be written continuously on the first two writing sheets (ie Page No. 3 & 4) only

i. Which of the following ions is primarily responsible for the resting membrane potential of a typical neuron
   a) Sodium b) Potassium c) Calcium d) Chloride

ii. Homeostasis is primarily maintained through:
   a) Hormonal control b) Neural control
   c) Feedback mechanisms d) All of the above

iii. What is the typical duration of an action potential in a neuron
   a) 1-2 milliseconds b) 10-15 milliseconds
   c) 100-200 milliseconds d) 1 second

iv. What is the functional unit of a skeletal muscle fiber
   a) Myofibril b) Sarcomere c) Myofilament d) Fascicle

v. Which of the following factors would most likely cause a decrease in blood pH
   a) Hyperventilation b) Diarrhea c) Dehydration d) Metabolic acidosis

vi. Cellular respiration primarily occurs in which organelle
   a) Nucleus b) Ribosomes c) Mitochondrion d) Golgi apparatus

vii. Which type of epithelial tissue is specialized for absorption and secretion, and is typically found in the intestine
   a) Simple squamous b) Stratified squamous
   c) Simple columnar d) Transitional epithelium

viii. Which connective tissue type acts as a shock absorber and reduces friction in joints
   a) Bone b) Elastic cartilage c) Fibrocartilage d) Hyaline cartilage

ix. Which muscle type is non-striated and primarily involved in involuntary movements
   a) Cardiac muscle b) Smooth muscle
   c) Skeletal muscle d) Both cardiac and smooth muscle

x. What is the resting membrane potential of a typical neuron
   a) +40 mV b) 0 mV c) -70 mV d) -90 mV

xi. Which type of white blood cell is primarily responsible for phagocytosis
   a) Neutrophils b) Eosinophils c) Basophils d) Lymphocytes

xii. Which type of plasma protein increases significantly during acute inflammation
   a) Fibrinogen b) Albumin c) Transferrin d) C-reactive protein

xiii. What is the average diameter of a normal red blood cell
   a) 4-5 µm b) 7-8 µm c)10-12 µm d)12-15 µm

xiv. Which of the following is a significant source of energy for RBCs
a) Fatty acids b) Glucose c) Amino acids d) None of the above

xv. Which organ is primarily responsible for the production of erythropoietin
a) Liver b) Kidney c) Spleen d) Bone marrow

xvi. The normal range of packed cell volume for adult males is approximately:
a) 20-30 % b) 35-40 % c) 40-45 % d) 55-65 %

xvii. The iron from degraded hemoglobin is recycled by the body, and the heme portion is converted into:
a) Urea b) Creatinine c) Uric acid d) Bilirubin

xviii. Which white blood cell is primarily responsible for the release of histamine and heparin during allergic and inflammatory response
a) Neutrophils b) Basophils c) Eosinophils d) Lymphocytes

xix. Which immunoglobin is most commonly involved in the response to a viral infection
a) IgM b) IgG c) IgA d) IgE

xx. The lifespan of a platelet in the bloodstream is typically around
a) 1-2 days b) 3-5 days c) 7-10 days d) 15-20 days

Short Answer Questions **(8x5=40)**

2. Describe secondary active transport across cell membrane.
3. Define and classify anaemia
4. Describe the applied physiology of platelets
5. Describe the functions of spleen
6. Describe ECG grid
7. Define heart block and explain its classification
8. Write down the sources, functions and daily requirement of Vitamin A
9. Describe the disorders related to Vitamin K

Long Answer Questions **(4x10=40)**

10. Describe the structure and functions of connective tissues
11. Explain the physiological and pathological variations of leucocytes
12. Explain in detail on various mechanisms for the regulation of blood pressure
13. Explain the metabolism of amino acids in detail

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