

PHYSIOLOGY

PAPER – I

Time: 3 Hours

Max Marks: 100

Note: Answer all questions

Give Diagrammatic representation wherever necessary

Multiple Choice Questions:

10 X 1 = 10

1. Hering Breuer Reflex protects lung from
 - a) Circulating Toxins
 - b) Circulating Phagocytes
 - c) Overinflation
 - d) Under Ventilation
2. Which of the following organs has the greatest blood flow per 100g of tissue?
 - a) Brain
 - b) Skin
 - c) Kidney
 - d) Liver
3. The most appropriate index of left ventricular afterload is
 - a) Systolic arterial pressure
 - b) Mean arterial pressure
 - c) Systemic vascular resistance
 - d) Left ventricular systolic pressure
4. Major source of ammonia production in renal tubular cell is by
 - a) Deamination of glutamine
 - b) Deamination of glutamic acid
 - c) Deamination of other amino acids, glycine, asparagine, alanine
 - d) Comes directly from arterial blood
5. Cholergics are the substances which causes
 - a) Contraction of gall bladder
 - b) Increase biliary secretion from liver
 - c) Neutralization of acid from stomach
 - d) Solubility of fats in micelles
6. First heart sound (HS1):
 - a) Marks the onset of ventricular systole
 - b) Caused by the closure of semilunar valves
 - c) Best heard over aortic and pulmonary areas
 - d) Characterized by high pitch and sharp sound
7. The renal "countercurrent" mechanism is dependent upon the anatomic relationship between:
 - a) The distal tubule and the macula densa
 - b) The loop of Henle and the macula densa
 - c) The loop of Henle and the vasa recta
 - d) The glomerulus and the afferent and efferent arterioles
8. The adhesion of platelets to subendothelial collagen is impaired in the absence of:
 - a) Von Willebrand factor
 - b) Plasmin
 - c) Heparin
 - d) Antithrombin III

9. The function of axonemal dynein is?
- | | |
|---|--|
| a) Moves particles to the 'minus' end of microtubule. | b) Binds to actin and produce motion by bending their neck region. |
| c) Responsible for the beating of flagella and cilia. | d) Moves particles towards 'plus' end of microtubule. |
10. Cholesterol content of a cell membrane influences which of the following characteristics of biological membrane
- | | |
|---------------------|-------------------|
| a) Ion permeability | b) Fluidity |
| c) Glycosylation | d) Hydrophobicity |

Essay/ Long Answer Questions:

2 X 15 = 30

11. An elderly male came to hospital with history of chest pain and breathing difficulty on and off for 2 days. His ECG showed ST segment depression and echocardiography showed that his stroke volume is <50%.

- Identify the condition.
- Define stroke volume, cardiac output and cardiac index with their normal value.
- Describe the factors regulating cardiac output.
- Define Fick's principle. Mention the methods to measure cardiac output. (1+3+6+5)

12. A young male went for trekking 2500m above sea level. On arrival to his stay, he complained of breathlessness. His SpO₂ was 70% in room air.

- Identify the condition.
- Describe the classification and patho physiology of Hypoxia
- Enumerate the treatment for the types of Hypoxia
- Discuss on Hyperbaric O₂ therapy. (1+6+6+2)

Short Answer Questions:

7 X 6 = 42

- Describe the mechanism of HCL secretion in stomach
- Name the different body fluid compartments. Give the composition of extracellular and intracellular fluids. Mention the methods to measure ECF.
- Describe Defecation reflex.
- Classify leukocytes. Describe the stages of leucopoiesis.
- Define haemostasis. Describe the extrinsic mechanism of coagulation.
- Enumerate the measures that strengthen the doctor patient relationship.
- Briefly explain water reabsorption by Kidney.

Very Short Answer Questions:

6 X 3 = 18

- Draw a neat labelled diagram of nerve action potential mentioning reasons for each phase.
- List functions of plasma proteins
- Draw a neat labelled diagram of Juxtaglomerular apparatus.
- Define uniport, symport and antiport with examples.
- Define urea clearance. How is it calculated. Name any other 2 substances used to measure renal clearance.
- Write the significance of Dietary fibres.
