

PHYSIOLOGY**PAPER – I****Time: 3 Hours****Max Marks: 100****Note:** Answer all questionsGive Diagrammatic representation wherever necessary

Multiple Choice Questions:**10 X 1 = 10**

- 1 The forced vital capacity is
 - a) The amount of air that normally moves into (or out of) the lung with each respiration
 - b) The amount of air that enters the lung but does not participate in gas exchange.
 - c) The amount of air expired after maximal inspiratory effort
 - d) The largest amount of gas that can be moved into and out of the lungs in 1 min
- 2 Compliance of lungs is greater in all except
 - a) Than the compliance of lungs and thorax together
 - b) In infants than in adults
 - c) When they are filled with saline than when they are filled with air
 - d) In standing than in recumbent position
- 3 Changes during Acclimatization at High Altitude include all except
 - a) Pulmonary ventilation is increased
 - b) Increased sensitivity of central chemoreceptor mechanisms to hypoxia and carbon dioxide.
 - c) DPG (2, 3-diphosphoglycerate) concentration of red blood cells increases
 - d) Metabolic alkalosis
- 4 Vasomotor ischemia triggers an increase in sympathetic outflow increasing BP and thereby facilitating restoration of cerebral Blood flow. This is called:
 - a) Bainbridge reflex
 - b) The CNS ischemic pressor response
 - c) Head's paradoxical reflex
 - d) Marey's reflex
- 5 The normal direction of mean cardiac vector ranges from:
 - a) 60 to -30 degree
 - b) 60 to 120 degree
 - c) 110 to 18 degree
 - d) -30 to 110 degree
- 6 The adhesion of platelets to subendothelial collagen is impaired in the absence of:
 - a) Von Willebrand factor
 - b) Plasmin
 - c) Heparin
 - d) Antithrombin III
- 7 The release of gastrin from G cells in the antrum of the stomach is inhibited by:
 - a) Activation of vagal efferent fibres to the stomach
 - b) Circulating epinephrine
 - c) Blood-borne calcium
 - d) Somatostatin

- 8 A proteolytic enzyme present in saliva is:
- | | |
|---------------|-------------|
| a) Ptyalin | b) Lysozyme |
| c) Kallikrein | d) Lipase |
- 9 Phototherapy given for treating jaundice:
- | | |
|---|---|
| a) Converts lumirubin to bilirubin | b) Acts by photoisomerization of bilirubin to soluble forms |
| c) Helpful only in obstructive jaundice | d) Any type of the light can be used |
- 10 Which one of the following molecules is used for cell signalling?
- | | |
|--------------------|-------------------|
| a) CO ₂ | b) O ₂ |
| c) NO | d) N ₂ |

Essay/ Long Answer Questions:

2 X 15 = 30

11. A woman aged 40 years comes to the physician with complaints of breathlessness, easy fatigue and headache. On examination, she had pale skin and conjunctiva. Her blood report shows Hb – 8 gm/dl, Haematocrit value – 30%
- (5+3+1+1+5)
- Identify the condition and elaborate the classification of anaemia.
 - How is Iron absorbed by the body and what factors can affect this process
 - Enumerate the causes of Nutritional anaemia
 - What is the suggested treatment
 - Enumerate blood indices and their normal values.
12. An obese elderly lady comes with a complaint of chest pain which appears to spread down her left arm when she climbs the stairs, it visually disappears when she takes rest for a few minutes.
- (2+4+4+3+2)
- Explain why there is chest pain when she climbs the stairs.
 - Describe the characteristic features of the coronary circulation
 - How is blood flow to cardiac muscle regulated
 - Describe the innervation of the Heart
 - What ECG changes would you expect to occur during an anginal episode

Short Answer Questions:

7 X 6 = 42

- Explain how cell communicate with another cell by giving suitable examples.
- Functions of Liver and Add a note on different types of Jaundice.
- Counter current mechanism in regulation of urine concentration.
- Describe types of Hypoxia. Role of oxygen therapy in Hypoxia.
- Pathophysiology of peptic ulcer.
- Discuss the roles of a physician.
- Glomerular Filtration Rate.

Very Short Answer Questions:

6 X 3 = 18

- Extra cellular fluid volume measurement.
- Heart sounds.
- Compliance of Lung.
- Physiological basis of pulmonary oedema.
- Hormones of Kidney.
- What is apoptosis. What is its physiological significance.
