QP. CODE: MB2019105

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MBBS FIRST YEAR EXAMINATIONS: AUGUST, 2024

PHYSIOLOGY PAPER-I

Time: 3 Hours **Max Marks: 100**

Note: Answer all questions.

Give Diagrammatic representation whenever necessary

Multiple Choice Questions: **10x1= 10**

1. Cortical nephrons differ from juxtamedullary nephrons in all except

a) Glomeruli are located in the renal cortex

b) Have short loop of Henle

c) Henle loop have rich vascular supply in the form of vasa recta

d) Nephrons play a major role in excretion of waste products

2. Simple diffusion and facilitated diffusion share which of the following characteristics?

a) Can be blocked by specific inhibitors

b) Do not require adenosine triphosphate (ATP)

c) Require transport protein

d) Saturation kinetics

3. A 60-year-old man's ECG shows that he has an R-R interval of 0.55 sec. Which of the following best explains his condition?

a) He has fever

b) He has a normal heart rate at rest

c) He has excess parasympathetic stimulation of the S-A node

d) He is a trained athlete at rest

4. Laminar flow in small airways is due to?

a) Small diameter

b) Small area of cross section

c) Low velocity of flow

d) Reynolds's number more than 2000

5. S.A. node acts as a pacemaker of the heart because?

a) Is capable of generating impulses spontaneously

b) Has rich sympathetic innervations

c) Has poor cholinergic innervations

d) Generates impulses at the highest rate

6. Pulmonary surfactant is secreted by

a) Type I Pneumocytes

b) Type II Pneumocytes

c) Clara cells

d) Bronchial epithelial cells

7. Iron is actively absorbed in:

a) Stomach

b) Duodenum and proximal jejunum

c) Large intestine

d) Ileum

8. Bile acids are synthesized from

a) Cholesterol

b) Amino acids

c) Bilirubin

d) Protein

9. Liver synthesizes all, EXCEPT

a) C3 complement component

b) Haptoglobin

c) Fibrinogen

d) Immunoglobulin

10. Osmotic pressure of a solution is related to the

a) Number of particles dissolved in the solution

b) Size and type of the particle

c) Chemical composition of the solution

d) Number of equivalents of the electrolyte in the solution

Essay/ Long Answer Questions: **2x15 =30**

11. Describe in detail the genesis of respiration and explain the chemical factors affecting the respiratory centres.

12. 25 year old female comes to clinic seeking for physical fitness certificate. All investigations were done including renal function tests. The details are below:

Blood Urea concentration - 0.15mg/ml.

Urinary urea concentration-7.5mg/ml, Urine flow-1ml/min

a) Calculate the urea clearance and comment on the value

b) What are the other substances that can be used to measure renal clearance

c) Define GFR (Glomerular Filtration Rate). Give its normal value.

d) Describe the factors affecting GFR.

e) How is GFR regulated.

Short Answer Questions: **7x6=42**

13. Define and classify immunity. Briefly explain CMI

14. Mechanism of secretion of HCl in stomach.

15. Describe major and minor cross matching. Mention the immediate complications of mismatch blood transfusion.

16. Mention the different types of intercellular junctions with examples. Briefly explain the structure and importance of gap junctions in cardiac muscle.

17. Describe and discuss the commitment to lifelong learning as an important part of physician growth

18. Explain the conducting system of heart with labelled diagram. What is the importance of AV nodal delay.

19. Define Homeostasis and describe about various feedback mechanisms.

Very Short Answer Questions: **6x3=18**

20. Give the morphological classification of anaemia with an example for each

21. List the functions of bile.

22. List functions of plasma proteins

23. Define apoptosis. Mention its physiological significance

24. Define uniport, symport and antiport with examples.

25. Poiseuille's law and its importance.

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