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23-01-2023

I-MBBS (Part-I) **1112 A3 + 1112 A4**

(This question paper consists of 2 pages)

First M.B.B.S. (Main) Examination (New Scheme)

January - 2023

Physiology

Paper- II

Time: Three Hours

Maximum Marks: 100

Attempt all questions in both sections.

Section-A

1. Fill in the blanks: **6x1=06**

a) The haematocrit of venous blood is greater than arterial blood because of a phenomenon called …….

b) The WBCs that increase in allergic conditions are …….

c) The first plasma protein to appear in urine in renal diseases is…….

d) The hormone involved in the initiation of the migrating motor complexes is…….

e) Cerebral ischemia in third degree heart block may lead to …… syndrome.

f) The decrease in the affinity of O_2 for haemoglobin when the pH of blood falls is known as …….

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2. Answer the following MCQ: **4x1=4**

i. All are associated with hemolysis EXCEPT:

a) G6PD deficiency

b) Sickle cell anemia

c) Physiological jaundice

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d) Pernicious anemia

ii. Reabsorption of Na^+ in kidney:

a) Takes place in association with C_1 - & HCO_3.

b) Occurs only in the proximal tubules

c) Is under control of parathormone hormone

d) Is a passive process

iii. ECG wave corresponding to ventricular repolarization is:

a) P wave

b) QRS complex

c) T wave

d) U wave

iv. Air remaining in lungs after tidal expiration is called:

a) Functional residual capacity

b) Residual volume

c) Expiratory reserve volume

d) Expiratory capacity

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3. Person A takes deep breaths at slow respiratory rate. (Tidal volume 600 ml & respiratory rate 10/min). Another person B shallow breaths at high respiratory rate (TV: 300ml & RR 20/min). Considering their dead space air as 150 ml, calculate their pulmonary ventilation and alveolar ventilation. Who, do you think is having better alveolar ventilation and why? Add a note on periodic breathing. 15

4. Write short note on (Any Five). 5 x 2 = 10

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a) Secretion of HCI by stomach.

b) Antigen presenting cells.

c) Surfactant in lungs.

d) Reabsorption of glucose in kidneys.

e) ECG in myocardial infarction.

f) Spherocytosis.

5. Explain briefly (Any Three). 3 x 5 = 15

a) Gastrointestinal hormones.

b) Regulation of ECF volume by kidney.

c) Nutritional anemias.

d) Cardiac cycle.

Section-B

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6. Describe with the help of diagrams, the counter current mechanism for generation of hyperosmolar medulla in kidney. What is the significance of the 'U' shape, long size and low blood supply is vasa recta? State the role of urea in concentrating urine. 20

7. What will happen and why (Any Five). 5 x 2 = 10

a) To GFR if a person takes protein rich diet.

b) To cardiac output during exercise.

c) To rate of respiration at high altitudes.

d) To RBC count in patients of chronic renal failure.

e) To PR interval in first degree heart block.

f) To reticulocyte count if a person is treated for anemia.

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8. Explain briefly (Any Four). **4 x 5 = 20**

a) Fetal circulation.

b) Oxygen hemoglobin dissociation curve.

c) Bicarbonate reabsorption in PCT.

d) Physiological jaundice.

e) Role of baroreceptors in regulating blood pressure.

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