

Solution

Q.1

- a. Explain the steps of coagulation of the blood.
-Flowchart of intrinsic and extrinsic pathways [02]
-Explanation[03]
- b. Explain spermatogenesis.
-Diagram of longitudinal section of a testis and deferent duct [02]
-Explanation of how sperms are generated. [03]
- c. Explain the structure of neuron.
-Diagram showing cell body ,axons and dendrites [02]
-Explanation about the diagram[03]
- d. Differentiate the systemic and pulmonary circulation of the blood.
-Diagram showing the systemic and pulmonary circulation[02]
-Explanation about each type of circulation[03]
- e. State the accessory organs of the digestive system and their functions.[05]
-Explanation and functions of following accessory organs:
Pancreas,liver, biliary tract, 3 pairs of salivary glands (parotid, submandibular, sublingual)

Q2. a. Explain the steps in the formation of the urine.

- Diagram of glomerulus and glomerular capsule [02]
-Pressure values(glomerular hydrostatic pressure, blood osmotic pressure and capsular hydrostatic pressure)[02]
-Explanation of filtration, selective reabsorption and tubular secretion[06]

Q2. b. Explain the structure and functions of the small intestine.

- Diagram showing structure of small intestine (peritoneum, longitudinal and circular muscle layers, submucosa and mucosa) [02]
-Diagram showing the section of the villus and microvilli, showing lacteal, goblet cells and enterocytes [02]
-Explanation of the structure [03]
-Functions of the small intestine [03]
Peristalsis, intestinal juice secretion, completion of chemical digestion of carbs, fats and proteins, protection against microbes infection, secretion of hormones like CCK, absorption of nutrients.

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Q.3.a List all endocrine glands, their hormones and the functions of those hormones. [10]

Hormones and functions of those hormones secreted by following endocrine glands:
Pituitary gland, hypothalamus, thyroid gland, parathyroid glands, adrenal glands,
pancreatic islets, pineal gland, thymus gland.

Q3.b.Explain the physiology of hearing.

- Diagram showing the physiology of hearing, passage of sound waves and summary of Transmission of sound waves [04]
- Explanation of the diagram[06]

Q.4 a Explain the different organs in the female reproductive system and state their functions.

- Structure and functions of External genitalia and internal genitalia (vagina, uterus, uterine tubes, ovaries)[04]
- Diagrams of above structures [03]
- Concise explanation of puberty in the female, the female reproductive cycle and Menopause [03]

Q4.b.Explain the exchange of gases taking place in the alveoli.

- Diagram showing the lower respiratory tract and its explanation[02]
- Diagram showing the alveoli and their capillary network and a diagram of a section through an alveolus [03]
- Explanation of the above diagram [05]

Q.5 a. Explain the conduction system of the heart.

- Explanation and diagram of flow of blood through the heart [04]
- Diagram showing natural pacemakers of the heart (SA node, AV node, purkinje fibers and bundle of HIS) [03]
- Explanation and functions of each natural pacemaker of heart.[03]

Q5.b. What is homeostasis? Explain the positive and negative feedback mechanism.

- Definition of homeostasis with examples [04]
- Positive feedback mechanism
 - diagram[02]
 - explanation[01]
- Negative feedback mechanism
 - diagram[02]
 - explanation[01]

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Q.6. Write short notes on any four of the following:

a. Reflex Arc

Diagram of reflex arc [02]

Explanation about reflex arc[03]

b. Structure of eye

-Diagram showing section of an eye [02]

-Explanation of the diagram [03]

c. Functions of stomach[05]

-Temporary storage of food, chemical digestion, mechanical breakdown of food, limited absorption of water, alcohol and some lipid soluble drugs, non-specific defense against microbes, preparation of iron salts for further absorption, production and secretion of intrinsic factor required for absorption of vitamin B12, Passage of gastric contents into the duodenum, secretion of the hormone gastrin.

d. Blood Pressure [05]

-Definition, systolic and diastolic blood pressure, factors determining BP, control of BP, techniques to measure BP

e. Functions of CSF (Cerebro Spinal Fluid) [05]

-As a support and protection to brain and spinal cord

-Acts as a shock absorber between the brain and the skull

-Keeps the brain and spinal cord moist

-Exchange of nutrients and waste products between CSF and nerve cells

-Helps in regulation of breathing