This question paper contains 4 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **5813**

Unique Paper Code : **3182011203**

Name of the Paper : **Human Physiology and Anatomy II**

Name of the Course : **B.Sc. (H) Biomedical Sciences**

Semester : **II (NEP-UGCF)**

Duration : **3 Hours** Maximum Marks : **90**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all.

Question No. **1** is compulsory.

Subparts of the questions should be attempted together.

Draw illustrations or diagrams wherever necessary.

1. (*a*) Differentiate between : 4×2=8

(*i*) Preload and Afterload

(*ii*) Endocrine and Exocrine

(*iii*) Central and Peripheral Chemoreceptors

(*iv*) Gall bladder bile and liver bile.

(*b*) Define : 5×2=10

(*i*) Ectopic Pacemaker

P.T.O.

(*ii*) Assimilation

(*iii*) Residual Volume

(*iv*) Prohormone

(*v*) Menarche.

(*c*) State True/False and/or justify (any *four*) : 4×2=8

(*i*) A diet high in salt could raise blood pressure.

(*ii*) Process of reabsorption decrease renal clearance of a substance.

(*iii*) Many adults cannot tolerate milk.

(*iv*) Breathing from a tank of 100% oxygen has little effect on the total oxygen content of blood.

(*v*) Only one mature ovum is produced by Oogenesis.

2. Write short notes on : 4×4=16

(*i*) OxyHb dissociation curve

(*ii*) Regulation of Calcium balance

(*iii*) Reabsorption in Proximal tubule

(*iv*) Hormonal control of spermatogenesis.

3. (*a*) Why is the enteric nervous system sometimes described as an 'enteric brain' ? Explain how the gastric secretion of HCl and pepsin is regulated during the cephalic, gastric and intestinal phases.

(*b*) Describe the transport properties of the loop of Henle and explain the interactions between the ascending and descending limbs in the countercurrent multipler system. What is the functional significance of this system ?

(*c*) Lungs are the only organs that receive the entire output of a ventricle. Explain this statement. Describe the mechanisms that increase the cardiac output during exercise. 5,5,6

4. (*a*) Is it true that estrogen is an exclusively female hormone ? Describe the changes in the ovaries and endometrium during a monthly cycle.

(*b*) Give the location and function of :

(*i*) Rhythmicity Center

(*ii*) Aortic arch

(*iii*) Sphincter of oddi

(*iv*) Crypts of Liberkuhn

(*v*) Sertoli cells

(*vi*) Foramen Ovale. 4,12

5. (*a*) Draw and label a diagram of a liver lobule. Describe the pathways of blood flow into, through and out of the liver.

(*b*) Explain the physiological changes in the blood's ability to transport and deliver oxygen to the tissues during the acclimatization to high altitude and identify the time course required for these responses.

(*c*) Describe the structure and importance of hypothalamo-hypophyseal tract. If a person has a pituitary tumor that secretes a large amount of hGH and the tumor cells are not responsive to regulation by GHRH and GHIH, will hyperglycemia or hypoglycemia be more likely and why ? 5,5,6

6. (*a*) Give *one* word for the following :

(*i*) Minimum plasma concentration of a substance resulting in its excretion in urine.

(*ii*) Abnormal heart sounds produced by abnormal blood flow.

(*iii*) A site for storage of sperms between ejaculations.

(*iv*) Brush border enzyme, which is required for activation of trypsin.

(*v*) Hormone needed to maintain pregnancy for first 10 weeks.

(*b*) Describe how thyroid hormone secretion is regulated. Explain how this system is affected by :

(*i*) Iodine deficiency and

(*ii*) Ingestion of thyroid hormone pills.

(*c*) Draw a well labelled diagram of :

(*i*) Coronal section of a kidney

(*ii*) Respiratory tree. 5,5,6