



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/PHMB/SEM-3/PHMB-305/2009-10  
2009**

**HUMAN PHYSIOLOGY & RECENT TRENDS IN  
MOLECULAR BIOLOGY**

Time Allotted : 3 Hours

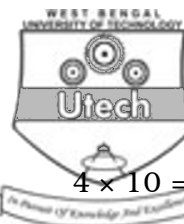
Full Marks : 70

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**GROUP – A**

1. Answer any *five* of the following questions : 5 × 1
- i) What is the type of tissue present on the inner surface of the stomach ?
  - ii) What is a glial cell ?
  - iii) Why is the nucleus of the neutrophil lobed ?
  - iv) What is the number of white blood cells per cubic millimetre of blood ?
  - v) What is cardiac cycle time ?
  - vi) Write one characteristic of cuboidal epithelium.
  - vii) What is lung surfactant ?
  - viii) What is the full form of EKG ?



**GROUP – B**

Answer any *four* of the following.

4 × 10 = 40

2. a) What is the molecular weight of collagen ?  
b) Write what you know about the molecular structure of collagen.  
c) Mention the function of collagen. 1 + 5 + 4
3. a) What is cardiac output ? Mention its values in men and women.  
b) Briefly describe the course of circulation of blood through human heart.  
c) Briefly describe the conducting tissues of the heart.  
d) What is cardiac cycle ? 2 + 4 + 3 + 1
4. a) What is tidal volume or vital capacity ?  
b) Describe briefly the factors affecting affinity of haemoglobin for oxygen.

OR

Describe briefly the reaction of haemoglobin and oxygen

- c) What is the partial pressure of oxygen in the human arterial blood ? 2 + 7 + 1
5. a) Describe briefly the neural control of breathing.  
b) Describe briefly the role of carotid and aortic bodies in the regulation of breathing. 5 + 5
6. a) What is a synapse ?  
b) Describe the mechanism of transmission of signals across a synapse with a suitable diagram.  
c) Mention the name of one excitatory and one inhibitory neurotransmitters. 2 + 6 + 2



7. Write short notes on any *four* of the following :

$4 \times 2\frac{1}{2}$

- a) ECG
- b) Hypoxia
- c) Connective tissue
- d) Collagen diseases
- e) Structure of a multipolar neuron
- f) Action potential.

**GROUP – C**

8. Introduction of exogenous double-stranded RNA ( *dsRNA* ) into *Caenorhabditis elegans* has been shown to specifically and potently disrupt the activity of genes containing homologous sequences. Critically explain with suitable examples how this animal model offers an appropriate system to study alleviation of gene function. Suggest a mechanism of genetic interference as proposed by the researchers.

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