



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Tech/BME(O)/SEM-3/BME-302/2012-13**

**2012**

**HUMAN PHYSIOLOGY – I**

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**

**( Objective Type Questions )**

1. Answer any *ten* of the following : 10 × 1 = 10

(A) Write brief answers for the following :

- i) Define cardiac output.
- ii) Write the functions of Neutrophil & Lymphocyte.
- iii) What is rigor mortis ?
- iv) Name the junctional tissue of heart.
- v) What is neuromuscular junction ?

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(B) Choose the correct alternatives for the following :

vi) In A Blood group the agglutinin(s) present in serum is/are

- a)  $\alpha$
- b)  $\beta$
- c)  $\alpha$  and  $\beta$
- d) no agglutinins.

vii) The time required for one normal cardiac cycle is

- a) 0.4 sec
- b) 0.2 sec
- c) 0.8 sec
- d) 0.7 sec.

viii) Einthoven's triangle is associated with

- a) EEG
- b) ECG
- c) EMG
- d) none of these.

ix) Fibrinogen is a

- a) Carbohydrate
- b) Fat molecule
- c) Plasma protein
- d) CNS stimulant.

x) Axon hillock is found in

- a) nephron
- b) neuron
- c) heart valve
- d) DNA.

xi) Gaseous exchange occurs between blood and surroundings body tissues through

- a) Venules
- b) Arterioles
- c) Capillaries
- d) none of these.



**GROUP - B**

**( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

2. What is cardiac cycle ? Write different phases and intervals of cardiac cycle. 2 + 3
3. What is ESR ? What are the normal rates of ESR in normal men and women ? Briefly explain anemia. 2 + 1 + 2
4. Explain the functional unit of kidney. What are the important functions of kidney ? 3 + 2
5. What is synapse ? Describe it with diagram. What are its important functions ? 3 + 2
6. Write down the composition of blood. Explain the functions of various plasma proteins. 3 + 2

**GROUP - C**

**( Long Answer Type Questions )**

Answer any *three* of the following.  $3 \times 15 = 45$

7. Discuss the mechanism of cross-bridge during the muscular contraction and write the role of *T*-system in muscular contraction. 10 + 5
8. What is mutation ? Define spontaneous mutation and induced mutation. Describe tautomeric and mutagenic substitution methods of gene mutation. 3 + 4 + 8



9. Write short notes on any *two* of the following :  $2 \times 7 \frac{1}{2}$
- a) ABO system of blood group
  - b) E-C coupling, Chronaxie, Rheobase, Tetanus
  - c) Erythropoiesis
  - d) Sympathetic and Parasympathetic Nervous system.
10. a) Explain briefly the structure, function and circulation through heart with suitable diagram.  $3 + 2 + 4$
- b) Describe the various heart sounds.  $3$
- c) What are the various factors which regulate blood pressure ?  $3$
11. a) Briefly explain the function, compounds and derivatives of haemoglobin.  $2 + 3 + 2$
- b) What do you mean by blood group ?  $2$
- c) Explain different kinds of blood groups.  $6$