



**First B.P.Th. (2012) Examination, Summer 2016  
HUMAN PHYSIOLOGY**

Total Duration : Section A + B = 3 Hours

Total Marks : 80

**SECTION – A & SECTION – B**

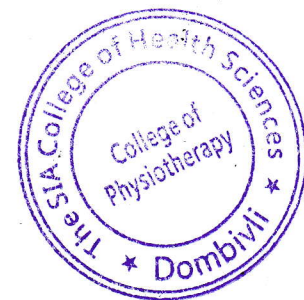
- Instructions :**
- 1) Use **blue/black** ball point pen only.
  - 2) **Do not** write anything on the **blank portion of the question paper**. If written anything, such type of act will be considered as an attempt to resort to unfair means.
  - 3) **All** questions are **compulsory**.
  - 4) The number to the **right** indicates **full** marks.
  - 5) Draw diagrams **wherever** necessary.
  - 6) Distribution of syllabus in Question Paper is only meant to cover entire syllabus within the stipulated frame. The Question paper pattern is a mere guideline. Questions can be asked from any paper's syllabus into any question paper. Students cannot claim that the Question is out of syllabus. As it is only for the placement sake, the distribution has been done.
  - 7) Use a common answer book for **all** Sections.

**SECTION – A SAQ (50 Marks)**

1. Short answer question (**any five** out of six) :

(5×3=15)

- a) Platelets. ○
- b) Functions of bile.
- c) Parathormone.
- d) Factors affecting GFR.
- e) Facilitated diffusion.
- f) Dark adaptation.



2. Short answer question (**any five** out of six) :

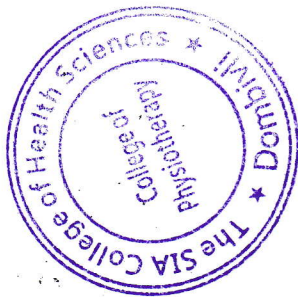
(5×7=35)

- a) Draw and write details of ECG in lead 2. ○
- b) Carbon dioxide transport in the body.
- c) Cardiorespiratory changes during moderate exercise. ○
- d) Physiological changes at high altitude.
- e) Enumerate functions of cerebellum.
- f) Strength duration curve.



## SECTION – B LAQ (30 Marks)

3. Long answer question (any one out of two) : (1×15=15)
- a) Define motor unit. Describe in detail the factors controlling the tension development in the skeletal muscle.
  - b) Draw neat label diagram of sarcoplasmic reticulum in skeletal muscle. What are the differences in sarcoplasmic reticulum of skeletal and cardiac muscle? Write the process of excitation contraction coupling in a skeletal muscle.
4. Long answer question (any one out of two) : (1×15=15)
- a) Define and classify synapse. Draw well labelled diagram of the synapse. Enumerate and Explain various properties of synapse.
  - b) Define cardiac cycle. Explain various events in cardiac cycle. Draw well labelled diagram of pressure volume changes in the left ventricle.





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**Section – A (SAQ) (50 Marks)**

1. Short answer question (**any five** out of six) :

- a) Features of sodium potassium pump.
- b) State the functions of middle ear.
- c) Juxta glomerular apparatus.
- d) Pancreatic juice.
- e) Functions of plasma proteins.
- f) Functions of Oxytocin.

(5×3=15)



2. Short answer question (**any five** out of six) :

- a) Physiological actions of Thyroid hormone
- b) State the differences between Fast and Slow muscle fibers.
- c) Draw a neat and labeled diagram of Oxygen-hemoglobin dissociation curve. Discuss the factors causing its shift to right.
- d) Functions of cerebellum.
- e) Draw a neat labeled diagram of ECG in lead II. Describe the various waves, intervals and segments. Clinical uses of ECG
- f) What are the effects of exercise training on cardio-respiratory system ?

(5×7=35)

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## Section - B (LAQ) (30 Marks)



3. Long answer question (any one out of two) : (1×15=15)
- a) i) What is Cardiac cycle ? 1
  - ii) Describe the atrial and ventricular events of Cardiac Cycle. 9
  - iii) Discuss the various pressure volume changes with the help of diagram. 5
  - b) Enlist the descending tracts. Describe the origin, course, and termination of Pyramidal tract. Differentiate between upper motor neuron and lower motor neuron lesions.
4. Long answer question (any one out of two) : (1×15=15)
- a) i) What are the energy sources used during muscle contraction ? 4
  - ii) Describe the molecular mechanism of muscle contraction. 9
  - iii) Add a note on myasthenia gravis. 2
  - b) i) Classification of receptors. 3
  - ii) Discuss the various properties of the receptors. 9
  - iii) Add a note on Phantom limb pain. 3





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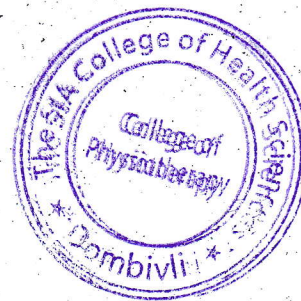
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**SECTION – "A" SAQ (50 Marks)**

1. Short answer question (**any five** out of six) : **(5×3=15)**
  - a) Active transport.
  - b) Composition and functions of blood.
  - c) Write the actions of testosterone.
  - d) Draw and label visual pathway.
  - e) Glomerular Filtration Rate.(GFR)
  - f) Composition and function of gastric juice.
2. Short answer question (**any five** out of six) : **(5×7=35)**
  - a) Ventricular events in cardiac cycle.
  - b) Transport of carbon dioxide in blood.
  - c) Effect of exercise on muscle power and endurance.



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- d) Basal metabolic rate .
- e) Neural regulation of respiration
- f) Actions of thyroid hormones.

SECTION – "B" LAQ (30 Marks)

3. Long answer question (any one out of two) : (1×15=15)
- a) Draw and label neuromuscular junction. Describe the transmission of signal across it. Add a note on myasthenia gravis.
  - b) Describe the properties of nerve fiber. Classify the nerve fibers. Add a note on Wallerian degeneration.
4. Long answer question (any one out of two) : (1×15=15)
- a) Enumerate the ascending tracts. Describe the pathway of touch sensation.
  - b) Define reflex action and draw a neat labelled diagram of reflex arc. Classify reflexes. Add a note on stretch reflex.





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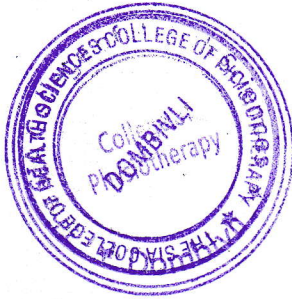
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SECTION – A (SAQ) (50 Marks)

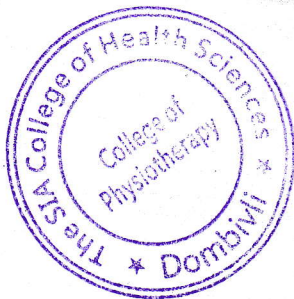
1. Short answer question (any five out of six) : (5×3=15)
  - a) Classify the different mechanisms of transport across cell membrane.
  - b) Functions of middle ear.
  - c) Factors affecting Glomerular filtration rate.
  - d) Regulation of erythropoiesis.
  - e) Functions of glucocorticoids.
  - f) Composition and functions of gastric juice.
2. Short answer question (any five out of six) : (5×7=35)
  - a) Define cardiac output and its regulation.
  - b) Define physical fitness and describe tests for physical fitness.
  - c) Lung compliance.
  - d) Length tension relationship in skeletal muscle.
  - e) Role of chemo-receptors in regulation of respiration.
  - f) Classify nerve fibers and enlist properties of nerve fiber.

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SECTION – B (LAQ) (30 Marks)

3. Long answer question (any one out of two) :
- a) Define sarcoplasmic triad. (1×15=15)
- Enlist differences between sarcoplasmic triads of skeletal and cardiac muscle. 4
- Discuss Excitation contraction coupling in skeletal muscle contraction. 10
- b) Define Action potential. 1
- Draw a well labeled diagram of action potential in nerve fiber. 4
- Describe ionic basis of action potential in nerve fiber. 10
4. Long answer question (any one out of two) :
- a) Enumerate various ascending tracts in the spinal cord. (1×15=15)
- Describe pathways for transmission of fine touch from upper arm. 4
- b) Define blood pressure. 11
- Classify the mechanisms involved in regulation of blood pressure. 4
- Describe the short term regulation of blood pressure. 10







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## SECTION – A SAQ (50 Marks)

1. Short answer question (any five out of six) : (5×3=15)
  - a) State Landsteiner's law. Describe "ABO" blood group system.
  - b) Functions of Liver.
  - c) Errors of refraction.
  - d) Factors affecting Glomerular filtration rate.
  - e) Cushing's syndrome.
  - f) Role of hypothalamus in body temperature regulation.
2. Short answer question (any five out of six) : (5×7=35)
  - a) Origin and spread of cardiac impulse.
  - b) Classify the nerve fibers. Add a note on saltatory conduction.
  - c) Explain the 'milk let down' reflex.
  - d) Functions of cerebellum.
  - e) Draw a neat and labeled diagram of oxygen-hemoglobin dissociation curve. State the factors causing the shift to right.
  - f) Define homeostasis. Explain the various feedback mechanisms with examples.



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SECTION – B LAQ (30 Marks)



3. Long answer question (any one out of two) : (1×15=15)
- a) Describe the contractile and regulatory proteins of the skeletal muscle. Discuss the molecular mechanism of muscle contraction. Add a note on energy sources for muscle contraction.
  - b) Discuss in detail the various properties of skeletal, cardiac and smooth muscle.
4. Long answer question (any one out of two) : (1×15=15)
- a) Define and classify pain. Describe the pain pathways. Add a note on analgesic system of brain.
  - b) Define Cardiac Cycle. Explain in detail the various phases of cardiac cycle. Draw and label the Pressure – Volume curves occurring during cardiac cycle.

