2019

MSc

2nd Semester Examination

HUMAN PHYSIOLOGY

PAPER – PHY - 203

Full Marks: 40

Time: 2 Hours

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

Unit – 203.1

1. Answer any *TWO* questions from the following: 2×2

a) What is a growth cone? Discuss the functions of neurotrophins. (1+1)

b) What do you understand by excitation contraction coupling? 2

c) What do you understand by instrumental learning? (1+1)
Cite two differences between classical conditioning and operant conditioning.

d) What is myomesin? (1+1)

2. Answer any *TWO* questions from the following: 2×4

a) Discuss briefly about sliding filament theory of muscle constraction.
Write down the differences between fast twitch and slow twitch muscle fibers.
Write down the function of titin. (2+1+1)

b) What is jet lag? Compare the jet log developed in East – bound and west – bound Jet travel? (1+3)

c) Define Sensitization. Describe briefly the cellular and molecular basis of long – term Sensitization. (1+3)

d) Describe the transport mechanisms at the blood brain barrier. (1+3)
What do you understand by Glut – I haploinsufficiency?

3. **Answer any *ONE* question from the following:** 1×8

a) i) What are PAR proteins?
ii) Discuss the functions of PAR proteins.
Iii) Describe the signalling pathways of neurotrophins with reference to their receptors.
Iv) Discuss briefly about the principle of chemoaffinity hypothesis of axon guidance. (1+2+3+2)

b) i) Define the terms positive reinforcement, negative reinforcement and extinction in operant conditioning.

ii) Explain the concepts of classical conditioning including unconditioned stimulus (US),conditioned stimulus (CS), unconditioned response (UR), and conditioned response (CR).

iii)Explain the roles of stimulus generalization and discrimination in conditioned learning.

iv)Define maze learning. What is its importance? (2+2+2+2)

Unit - 203.2

1. Answer any *TWO* from the followings: 2×2

a) Mention the positive and negative feedback systems in homeostatic mechanisms.
b) Write down the brief functions of gut dendritic cells.
c) Mention the abnormalities in hemostasis disorders?
d) Write down the endogenous sources of ROS.

2. Answer any *TWO* from the following questions: 2×4

a) How the homeostasis in body temperature is mentioned?
b) Write down briefly the innate immunity mechanisms in intestine.
c) Describe the location and function of low and high pressure volume sensors present in the vascular system of human body.
d) Write down a brief note on thrombotic thrombocytopenic purpose (TTP).

3. Answer any *ONE* from the following questions: 1×8

a) i) Mention the reactions catalyzed by SOD and catalas in oxidative stress.

ii) Discuss the regulation of the protein functions by mediated transcription and direct oxidative modification in our body. 2+(3+3)

b) i) Describe the cellular mechanism of platelet plug formation at primary haemostasis.

ii) What is heparin? Mention different types of heparins according to molecular weight. Describe the role of heparin in blood coagulation. (4+(1+1+2)