

2013

M.Sc.

4th Semester Examination

HUMAN PHYSIOLOGY

PAPER—PHY-403

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.

Write the answers to the questions of each Unit in separate books.

[Special Paper]

(Microbiology & Immunology)

UNIT— 41

Answer any *two* questions from the following :

1. (a) Mention the role of sigma factor in the process of transcription.
- (b) Describe in brief the mechanism of termination of transcription in prokaryotes including the role of rho factor.

(Turn Over)

- (c) Give an account of the feature of promoter sequence in eukaryotes.
3+5+2
2. (a) Describe the rolling circle model of DNA replication.
(b) Give an evidence in favour of RNA as a genetic material.
5+5
3. (a) What is genetic recombination?
(b) Discuss in brief the mechanism of conjugation and transformation in bacteria.
2+(4+4)
4. (a) What is RNA interference?
(b) Discuss the mechanism of gene silencing by RNA interference.
(c) What is RdRP?
3+6+1

UNIT—42

Answer any *two* questions from the following :

1. (a) Define chemokine.
(b) Write the different types of cell adhesion molecules (CAM).
(c) Describe the mechanism of inflammation.
1+4+5
2. (a) Differentiate autograft, isograft, allograft and xenograft.
(b) What are the different patterns of graft rejection?
(c) Name two-immuno suppressive drugs with their actions.
4+4+2
3. (a) Describe the principle and applications of FACS.
(b) Write about the role of T-cells in case of hypersensitivity reaction.
5+5
4. (a) What do you mean by "self tolerance" and "autoimmunity"?
(b) State the principle of ELISA.
(c) Write the brief notes on Myasthania gravis.
4+3+3

(Ergonomics and Sports Physiology)**UNIT— 41**

Answer any two questions from the following :

1. (a) What do you mean by 'zone of cooling' and 'zone of heat regulation' ?
- (b) Why workers feel numbness in fingers in case of vibration induced white finger ?
- (c) "VDT operator complain about redness and irritation of eyes"—why ?
- (d) "Quantitative visual display has a great effect on the human performance"—explain.

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

2. (a) Discuss the effects of object size and contrast on illumination required for visual tasks.
- (b) How flickering of light affect the health and efficiency of workers ?

(3+3)+4

3. (a) Mention the risk factors of manual material handling.
- (b) Discuss the factor related to the energy cost of lifting task.
- (c) State the NIOSH lifting equation.

3+5+2

4. What do you mean by industrial contaminant ? Mention the role of heavy metal as contaminant and their health hazards on industrial workers.

3+7

UNIT— 42

Answer any *two* questions from the following :

1. (a) Why percentile values of body dimension are used for ergonomic design ? Explain with example.
(b) Discuss the principles of fixing work surface height for performing tasks in standing and lying posture.
(c) What should be the optimum leg room for a seated work ?

4+(3+2)+1

2. (a) What is RMI ? State the common causes of RMI.
(b) Discuss the guidelines for reducing RMI.
(c) What is Tendonitis ?

(1+3)+4+2

3. (a) What is work posture ? Describe briefly the OWAS method for evaluating work posture.
(b) Discuss how selection and training of workers can improve the efficiency and productivity.

4+6

4. (a) What are the common causes of occupational hazards in agricultural workers ?
(b) How do you manage occupational stress for a factory worker ?

4+6

**(Endocrinology & Reproductive Physiology
with Family Welfare)**

UNIT— 41

Answer any *two* questions from the following :

1. (a) How hypertension is classified ?
(b) Discuss the classical and non-classical functions of aldosterone.
(c) "Renin-angiotensin-aldosterone axis regulates sodium homeostasis"—Explain it.
2+4+4
2. (a) What do you know about "Insulin receptor signaling" ? State its role to the development of insulin resistance.
(b) Mention the importance of glycosylated haemoglobin test.
4+4+2
3. (a) "Adipose tissue is an endocrine organ"—justify it critically.
(b) Elaborate the basic concept of lipostat mechanism relating to adiposity.
(c) Mention in brief the environmental influences in obesity.
4+4+2

4. (a) Define 'Maternal mortality rate'. Describe the sociocultural factors behind the material mortality.
- (b) What do you know about 'Alcohol withdrawal' ?
- (c) Mention the different theories of aging. Discuss the role of dehydroepi-androsterone during aging.
- (2+2)+2+(2+2)

UNIT— 42

Answer any *two* questions from the following :

1. (a) Describe the structure of testicular tight Junction and state its physiological functions.
- (b) Discuss in brief about sertoli cell-Leydig cell cross talk in connection with spermatogenesis.
- (2+3)+5
2. (a) "Placental steroidogenesis plays a critical role in the maintenance of pregnancy"—justify the statement.
- (b) Discuss on "Placental hormone transfer".
- 5+5
3. (a) Write the types of IUDs ?
- (b) State the advantages and shortcomings of IUDs.
- (c) Mention briefly about the barrier methods of contraception.
- 3+3+4

4. (a) Mention the cell types and functional characteristics of cultured cell.

(b) Discuss the using of cell culture technology.

(3+3)+4