

M.Sc. 4th Semester Examination, 2011

HUMAN PHYSIOLOGY

PAPER—XXI

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate 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 questions of each Unit in separate books

(Microbiology and Immunology)

UNIT—41

Answer any *two* questions

1. (a) What is Attenuation ?

- (b) Discuss the mechanism of attenuation with special reference to trp operon. 3 + 7
2. (a) What do you understand by initiation of transcription ?
- (b) Give a brief account of promoter consensus and its significance. 3 + (4 + 3)
3. (a) What is genetic recombination ?
- (b) Discuss briefly the mechanism of transformation that leads to genetic recombination.
- (c) What is abortive transduction ? 3 + 5 + 2
4. (a) Write notes on :
- (i) Constitutive mutation
- (ii) Origin of replication.
- (b) Describe one test by which one can confirm whether bacteriophage contains DNA or RNA as genetic material. $\left(2\frac{1}{2} + 2\frac{1}{2}\right) + 5$

UNIT - 42

Answer any *two* questions

1. (a) Define inflammation.
(b) What are the different types of CAM molecules present in the neutrophil and endothelial cells?
(c) Write the multistep model of neutrophil recruitment during inflammation. 1 + 4 + 5
2. Describe the role of oncogene, proto-oncogene and the tumor suppressor genes in cancer induction. 3 + 3 + 4
3. (a) What are the routes of transmission of HIV-I?
(b) Describe in brief the replication cycle of HIV-I emphasizing its unique characteristics. 4 + 6
4. (a) What are "self-tolerance" and "autoimmunity"?
(b) Discuss the mechanism of induction of autoimmune response citing example of Myasthenia Gravis. 4 + 6

(Ergonomics and Sports Physiology)

UNIT – 41

Answer any *two* questions

1. Answer the following questions : $2\frac{1}{2} \times 4$
- (a) Calculate the noise dose when a person exposed to continuous noise of 100 dB for 7 hours in a work shift.
 - (b) What should be the height, breadth, and thickness of a capital letter for alphanumeric display ?
 - (c) What are the effect of light on visual performance in relation to age ?
 - (d) Which one is more preferable from the ergonomic point of view : fitting the task to man or fitting the man to the task ?
2. (a) What is P_4SR ? How is P_4SR determined ?
- (b) Discuss the effects of heat stress on the performance of industrial workers. (1 + 3) + 6

3. (a) Write what do you know about the psychological variations in ability to acquire specific skill.
- (b) Mention the role of motivation in work psychology. 6 + 4
4. (a) Discuss the principles of coding of controls.
- (b) Explain control-response compatibility with an example. 6 + 4

UNIT - 42

Answer any *two* questions

1. Answer the following questions : $2\frac{1}{2} \times 4$
- (a) What is body part discomfort scale ?
- (b) How do you settle the depth of the seat surface of a chair for a group of users ?
- (c) "Shift of CG away from its normal location leads to postural stress." Explain.
- (d) "The principle of design for average has limited application." Explain.

2. (a) What is work envelop ?
(b) How is work envelop related to work station design ?
(c) Discuss important ergonomic criteria for VDT work station design. 2 + 2 + 6
3. (a) What are the common causes of tendonitis ?
State the management of tendonitis.
(b) What are the health problems of night shift workers ? (3 + 4) + 3
4. Describe the occupational diseases of mine workers. How would you manage occupational stress in mines ? 6 + 4

*(Endocrinology, Reproductive Physiology
and Family Welfare)*

UNIT - 41

Answer any *two* questions

1. (a) Discuss the role of aldosterone in the regulation of 'Renin-Angiotensin-Aldosterone Axis'.

- (b) What is essential hypertension ? Mention the role of Renin-Angiotensin system in the pathogenesis of essential hypertension. 4 + (2 + 4)
2. (a) What is andropause ? Elaborate the role of testosterone during aging.
- (b) What are the merits and demerits of testosterone replacement therapy ? (2 + 4) + 4
3. (a) Mention the current views of the pathogenesis of Type-I diabetes mellitus.
- (b) Explain the relationship between Type-I diabetes and HLA complex. How environmental agents triggers the pathogenetic processes in genetically predisposed individuals. 3 + (4 + 3)
4. (a) How maternal care can be taken during pregnancy ?
- (b) State the effects of drugs and smoking on maternal health during pregnancy period. 4 + (3 + 3)

UNIT - 42

Answer any *two* questions

1. (a) How polyspermy is prevented during fertilization ?
(b) Discuss the cellular mechanism of implantation. 3 + 7

 2. (a) Discuss the role of sertoli cell-leydig cell axis for steroidogenesis.
(b) State the ultramicroscopic structure of tight junction in testis-structure and describe its role. 4 + (4 + 2)

 3. (a) Discuss the role of zona pellucida protein in fertilization.
(b) State the events of acrosome reaction and its role in fertilization. 4 + (4 + 2)

 4. (a) Mention the different growth media used for mammalian cell culture. What is primary culture ? State briefly about the maintenance of adherent cell lines.
(b) What is dilution cloning ? (2 + 2 + 4) + 2
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