2009

M.Sc.

3rd Semester Examination

HUMAN PHYSIOLOGY

PAPER—XVI

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.

[Microbiology & Immunology]

UNIT—31

Answer any *two* questions.

1. (a) Describe the C-4 pathway for CO_2 fixation.

(b) Mention its significance over C-3 cycle 8+2

2. (a) What is the difference between symbiotic and nonsymbiotic nitrogen fixation? Name two nitrogen fixer, one from each group.

(b) Discuss the functions of the individual genes involved in fixing Nitrogen.. (2+2)+6

3. (a) What is meant by "Bioleaching" ?

(b) What are basic principles for Microbial Bioleaching ?

(c) Mention two microbial agents responsible for Bioleaching. Briefly describe the characteristics of one of them. 3+4+(1+2)

4. Write short notes on : 5×2

(a) The P-cluster;

(b) Mechanism of Streptokinase and Coagulase activity as virulence factors.

UNIT—32

Answer any *two* questions :

1. (a) Mention the receptors and co-receptors present in the T-lymphocytes with suitable diagramme.

(b) Describe the signal transduction mechanism of T-cells.

(c) What is the importance of T-cell activation. 3+5+2

2. (a) Write the different function of B-cell after the recognition of antigen.

(b) Describe the development of B-cell mentioning rearrangement of the gene. 3+7

3. (a) Discuss the immunological function of Tumor nurosis factor (TNF).

(b) Write the endocytic pathway of processing and presentation of antigen. 6+4

4. Write short notes of the following : 2×5

(i) Immunological tolerance;

(ii) TH_1/TH_2 balance.

[Ergonomics and Sports Physiology]

UNIT—31

Answer any *two* questions.

1. (a) What do you mean by sports anemia? Discuss in brief, different stages of sports anemia.

(b) What are the remedial measures of sports anemia?

(c) How spacing of meals is important for sports performance? 5+3+2

2. (a) Discuss the effects of exercise on hypothalamus-pituitory-adrenal axis.

(b) State the effects of exercise on catecholamines.

(c) Discuss briefly the sources of reactive oxygen specis in exercise. 4+2+4

3. (a) Classify FT fibers on the basis of their physico-chemical characteristics.

(b) How ST and FT fibers are related to various grades of activity? 4+6

4. (a) Describe the spirometric assessment of restrictive type of lung function impairment.

(b) Mèntion different system by which lactic acid is removed from the body. 5+5

UNIT—32

Answer any *two* questions :

1. (a) What is AMI? Discuss the causes of AMI with experimental evidences.

(b) Discuss whether athletic participation during childhood delays the onset of menarche or not.

(c) State the effects of heavy exercise on labour and delivery. 5+3+2

2. (a) Discuss basic physiological principles of yoga. State the advantages of regular practice of yoga.

(b) Point out the factors that are related to the age associated changes among the children and adolescent 5+5

3. (a) "Hypertrophy and hyperplasia are the attributes of physical training" — Explain.

(b) Describe the biochemical changes, which are caused due to weight training programme in athlets.

(c) Mention the basic principles of endurance training. 4+4+2

4. (a) Mention the types of injury found in cartilage among the athlets.

(b) What is blood doping. How it enhances athletic performance? 4+6

[Endocrinology, Reproductive Physiology & Family Welfare]

UNIT—31

Answer any *two* questions.

1. Write short notes on the following : $2\frac{1}{2} \times 4$

   (i) Characteristics of carrier proteins and their function;

   (ii) Biological and molecular actions of thymus hormones;

   (iii) Endocrinopathy of nitric oxide pathway;

   (iv) Intra and interassay variation in immunoassay.

2. (a) Distinguish between direct and indirect ELISA.

   (b) Write the fundamentals of competitive ELISA. (3+3)+4

3. (a) How do erythropoietin and colony stimulating factors play role in erythropoiesis ?

   (b) What are eicosanoids ? How do they perform majors actions ? (2+3)+(1+4)

4. (a) Elaborate the regulation of cell cycle withy special reference to checkpoints.

   (b) Describe the molecular basis of glucagonoma and somatostatinoma.

   $5+(2\frac{1}{2}+2\frac{1}{2})$

UNIT—32

Answer any *two* questions :

1. Write short notes on the following : $2\frac{1}{2} \times 4$

   (a) Male infertility;

   (b) Molecular structure of sperm tail;

   (c) Hazards of oxidative stress in reproduction.

   (d) Role of MMPs on uterine cycle.

2. (a) Write the location of 'SRY' gone.

   (b) Discuss the role of SRY gone on sex differentiation by controlling the downstream genes. 3+7

3. (a) Discuss the fundamental steps followed in ICSI to challange the infertility.

   (b) Why maximum success rate is not achieved in ICSI ? 7+3

4. (a) Mention the causes of female infertility.

   (b) What is superovulation ?

   (c) State the hormone treatment regimen for super-ovulation. 5+2+3

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