PG 3rd Semester Examination, 2010

HUMAN PHYSIOLOGY

PAPER—XVI

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—31

Answer any *two* questions

1. (*a*) What do you understand by 'Infection' and 'Virulence factor(s)' ?

   (*b*) Discuss briefly the steps of developing infection in a host by a microbial agent. 2 + 2 + 6

2. (*a*) What is meant by PCR cycle ? Why it is called C_3 cycle ?

   (*b*) Describe the Calvin-Benson Cycle justifying PCR reaction. 2 + 1 + 7

3. (*a*) Describe in brief the direct and indirect methods for microbial leaching of Ores.

   (*b*) What are the properties of Ores that affect microbial leaching mechanism ? 7 + 3

4. Write short notes on any *two* of the following : 5 x 2

   (*i*) Microbial degradation of petrolium

   (*ii*) Chemolithotrophy

   (*iii*) Anoxygenic photosynthesis.

UNIT—32

Answer any *two* questions

1. (*a*) How are B-cells activated ? State the importance of transcription factors.

   (*b*) What is SRID ? (6 + 1) + 3

2. (*a*) What do you mean by antibody diversity? Illustrate your answer mathematically.

(*b*) Write the role of caspases in apoptosis. 2 + 5 + 3

3. "T_H and T_C cells are MHC class II and MHC class I restricted respectively"— Justify the statement with special emphasis on the role of MHC molecules in the restriction of T-cell responses. 10

4. (*a*) Describe briefly the molecular structure of cytoxine receptor family.

(*b*) Differentiate between TH 1 and TH 2 on the basis of their effector functions. 6 + 4

(*Ergonomics and Sports Physiology*)

UNIT—31

Answer any *two* questions

1. (*a*) State the principle of measuring VO_2-max by direct method.

(*b*) Write a treadmill exercise protocol for determining VO_2-max.

(*c*) Mention the criteria for terminating exercise during measuring VO_2-max by direct method. 4 + 4 + 2

2. (*a*) Discuss the importance and methods of supplementation of water in endurance type of sports.

(*b*) State the role of vit. B_1 and vit.C in exercise. 6 + 4

3. (*a*) What is ergoreceptors ?

(*b*) How does central command regulate exercise pressor reflex in man ?

(*c*) State the role of posture in the regulation of cardiovascular parameters in our body. 2 + 4 + 4

4. (*a*) Discuss the cardiac responses during exhaustive sports performance.

(*b*) State the bioenergetic basis of anaerobic capacity.

(*c*) State the effects of exercise on pancreatic hormones. 3 + 3 + 4

UNIT — 32

Answer any *two* questions

1. (*a*) Define ergogenic aid.

   (*b*) Explain the risks of using cocaine as ergogenic aid among the athletes.

   (*c*) How does caffine impore endurance performance? 2 + 5 + 3

2. (*a*) What is Fartlek training?

   (*b*) State the effects of overtraining in athletes.

   (*c*) What is detraining? 3 + 4 + 3

3. (*a*) Discuss the importance of psychomotor activities in sports.

   (*b*) Discuss the characteristics of motivation. 6 + 4

4. (*a*) What do you mean by sports injury?

   (*b*) What is healing of injury?

   (*c*) Discuss briefly the management of sports injury. 3 + 2 + 5

(*Endocrinology, Reproductive Physiology & Family Welfare*)

UNIT — 31

Answer any *two* questions

1. (*a*) How would you define a growth factor ?

   (*b*) Elaborate the angiogenesis-regulating growth factors.

   (*c*) Mention the traditional and recent concept regarding the functions of carrier proteins of hormone. 3 + 3 + (2 + 2)

2. (*a*) Write the full form of IRMA. State the fundamental principle of IRMA.

   (*b*) Why IRMA is more accurate than RIA ?

   (*c*) What do you mean by cross variation of hormone in ELISA ? (1 + 3) + 3 + 3

3. (*a*) State the distribution of androgen receptors among lymphoid tissues.

   (*b*) Discuss the effects of androgens on interleukin secretion. 4 + 6

4. (*a*) How does PDGF show its ability to induce cells to proliferate in case of wound-healing process.

(*b*) Describe how Src protein functions as a tyrosine kinase. 3 + 7

UNIT — 32

Answer any *two* questions

1. (*a*) What are the causes of male infertility ?

(*b*) State the criteria those should be tested for adoption of IUI.

(*c*) Briefly describe the fundamental steps followed in IUI. 2 + 3 + 5

2. (*a*) What is dictyate stage of Oogenesis ?

(*b*) State the 'Meiosis ON-OFF' process of Oocyte development with special reference to its controlling system. 2 + 8

3. (*a*) Explain the 'Sertoli cell-Leydig cell cross talk' on androgenesis.

(*b*) Write the roles of thyroxine and insulin on androgenesis. 4 + (3 + 3)

4. (*a*) Describe the different stages of folliculogenesis briefly.

(*b*) Describe the role of different hormones and factors in ovulation. What is leuteolysis ? 4 + 4 + 2