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**PG/IVS/PHY - 403/14**

**M.Sc. 4th Semester Examination, 2014**

**HUMAN PHYSIOLOGY**

**PAPER— PHY - 403**

*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*

**( Special Paper : *Microbiology and Immunology* )**

**UNIT – XXXXI**

**Answer any *two* questions**

**1. (a) What is transforming principle? How was it identified?**

**(b) How was DNA first identified as genetic material?**

**(2 + 4) + 4**

**( Turn Over )**

- 2 (a) Differentiate lytic and lysogenic phages.
- (b) Discuss in brief the molecular mechanism of genetic switch maintaining lysogeny.
- (c) What is transduction ?  $3 + 5 + 2$
3. (a) Discuss in brief the 'promoter consensus' in prokaryotic genome.
- (b) What do you understand by 'positive' and 'negative' regulation of gene expression ?
- (c) What are inducers ? Give examples of it.  $4 + (2 + 2) + 2$
4. (a) Define transposons.
- (b) Describe the structure of bacterial IS elements.
- (c) What do you understand by 'conservative' and 'replicative' transposons ?
- (d) What are the features that distinguish between transposon and retro-transposon ?  $2 + 3 + 4 + 1$

UNIT – XXXXII

Answer any *two* questions of the following

1. How do the extracellular bacteria react with innate and adaptive immunity of the host ? What are the evasion strategies of bacteria to escape from the host immune system ? 6 + 4
  
2. (a) Define cross priming.  
(b) Describe the different strategies of cancer vaccine to kill the cancer cells. 2 + 8
  
3. (a) What do you mean by active immunity and herd immunity ?  
(b) What are the criteria for an ideal vaccine ?  
(c) Discuss the different types of vaccine strategies for pathogens. 3 + 2 + 5
  
4. Describe the role of mast cells in causing type I hypersensitivity. How do cytotoxins regulate IgE production ? Does genetics have any role in allergic diseases ? 4 + 3 + 3

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( Special Paper : *Ergonomics and Sports  
Physiology* )

UNIT – XXXXI

Answer any *two* questions of the following

1. What do you mean by work-rest cycle ? Discuss the methods of determination of rest-pause for manual activity. 3 + 7
  
2. (a) What do you mean by noise induced hearing loss ? What are TTS and PTS ?  
(b) What are the effects of noise on performance ?  
(c) State the control measures of industrial noise. (1 + 2) + 3 + 4
  
3. (a) What is cognitive ergonomics ? How is it related to human performance ?  
(b) How can you determine ET and CET ?  
(c) How is contrast related to visual performance ?

( 5 )

(d) "Cheap nutrient is the chief performance enhancer in endurance activity" – Explain in brief.  $2\frac{1}{2} \times 4$

4. (a) What do you mean by qualitative and quantitative visual display? Give examples.
- (b) What is coding of control? Discuss different methods of coding of control.  $4 + (1 + 5)$

#### UNIT – XXXXII

Answer any *two* questions

1. (a) Mention the location of CG in human body? State factor affecting CG of human body.
- (b) State the principle of determining CG of human body by segmental method.  $(1 + 4) + 5$
2. (a) Discuss the occupational diseases of workers in mines.
- (b) How can such problems be managed?  $7 + 3$

3. (a) State the ergonomic procedure for lifting load.
- (b) How is back injury caused due to Manual Material Handling (MMH)?
- (c) Mention some points for good MMH. 3 + 3 + 4
4. (a) "A fixed work station is more stressful than an adjustable one" – Justify.
- (b) Discuss the concept of adjustability in the design of school furniture.
- (c) What do you mean by lordosis and Kyphosis? 4 + 4 + 2

( Special Paper : *Endocrinology, Reproductive Physiology and Family Welfare* )

UNIT – XXXXI

Answer any *two* questions

1. (a) Mention the components of renin-angiotensin system.

- (b) Elaborate the functions of angiotensin II through  $AT_1$  and  $AT_2$  receptors.
- (c) Write a note on pheochromocytoma. 3 + 4 + 3
2. (a) Insulin resistance is associated with proatherogenic dyslipidemia – justify.
- (b) State the relationship among nutrient overload, adiposity, and insulin resistance.
- (c) What is mTOR? 4 + 4 + 2
3. (a) Discuss the effects of alcohol on liver, bone density and endocrine system.
- (b) State the causes of neonatal mortality.
- (c) Mention the methods for the reduction of neonatal mortality. (2 + 2 + 2) + 2 + 2
4. (a) Describe the change in the hormone level of normal women and men during the aging process.
- (b) What is andropause?
- (c) Discuss the role of testosterone during aging. 5 + 2 + 3

UNIT – XXXXII

Answer any *two* questions

1. (a) Discuss about glycoproteins present in zona pellucida.  
(b) State critically the role of mZP3 as a sperm receptor.  
(c) Mention the activity of mZP3 oligosaccharides in sperm receptor function. 4 + 3 + 3
2. (a) Describe the biosynthesis of human chorionic gonadotropin.  
(b) Elaborate the physiological function of hCG. 5 + 5
3. (a) Write the types of "progestin-only contraceptives".  
(b) Discuss the mechanism of action of these contraceptives mentioning its side effects.  
(c) What is "progestin-only-emergency" contraceptive pills? 3 +(2 + 3) + 2



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4. (a) Discuss the 'Retroviral' and 'Microinjection' gene transfer methods.

(b) What is transgenic animal pharming ?

(c) What do you know about 'transgenic fish' ?

(2 + 2) + 4 + 2

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