

**2010****M.Sc.****4th Semester Examination****HUMAN PHYSIOLOGY****PAPER—XXI***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 AND IMMUNOLOGY ]****UNIT—41***Answer any two questions.*

1. (a) Define Generalized and Specialized Transduction.  
(b) Describe an experiment to establish the usefulness of conjugation in Genetic Mapping (2½+2½)+5
2. (a) What is meant by "semiconservative mode of DNA replication" ?  
(b) Give a brief account of Meselson and Stahl Experiment in support of Semiconservative Mode of Replication of DNA" ? 3+7
3. (a) Discuss the brief the mechanism of Termination of Transcription.  
(b) What os Antitermination ? 6+4

*(Turn Over)*

4. Write short notes :  $2\frac{1}{2} \times 4$
- (a) Nucleosome ;
  - (b) Lytic and Lysogenic Phages ;
  - (c) Denaturation Bubble ;
  - (d) Transcriptional activators and repressors.

### UNIT—42

Answer any *two* questions.

1. (a) What is anaphylactic reaction ?  
 (b) What are the sequence of events involved in the development of anaphylactic reaction ?  
 (c) Describe the IgE mediated biochemical events in mast cell activation and subsequent degranulation. 1+2+7
2. (a) Define autoimmune disorder.  
 (b) Discuss the mechanism of development of autoimmune diseases like myasthenia gravis and systemic lupus - erythematosus (SLE). 2+4+4
3. (a) Name one immunosuppressive drug by mentioning its mechanism of action, which is used to prevent rejection of organ.  
 (b) Describe briefly how serum antibodies of HIV can be detected by ELISA. 4+6
4. Write brief notes on the following :  $4 \times 2\frac{1}{2}$ 
  - (a) Cell adhesion molecules (CAM) ;
  - (b) Neuro-immuno-endocrine system ;
  - (c) Tissue typing ;
  - (d) FACS.

**[ERGONOMICS AND SPORTS PHYSIOLOGY]****UNIT—41**

Answer any two questions.

1. (a) What is glare index?  
(b) What is clo? How is it related to thermal comfort?  
(c) What do you mean by colour stereotype?  
(d) Why weighted scale like dBA is used for measuring noise?  $2\frac{1}{2} \times 4$
  
2. (a) What are different types of compatibility?  
(b) Discuss the principles of designing visual information display.  
(c) What is qualitative visual display? 3+6+1
  
3. (a) Mention the objectives of work psychology.  
(b) Discuss the psychological factors that can enhance the performance. 3+7
  
4. (a) State the effects of vibration on visual performance.  
(b) What is vibration induced 'white finger'? Discuss the causes, symptoms and preventive measures of white finger. 4+(1+5)

## UNIT—42

Answer any *two* questions.

1. (a) What body dimension and percentile value will you take to settle the work surface height for a task of moderate work load under standing posture ?  
(b) "Load should be kept close to the body while handling it manually"—Justify.  
(c) Why a slightly inclined desk-top is recommended for a reading table ?  
(d) Why sitting-standing posture is preferred to continuous sitting or standing ?  

$2\frac{1}{2} \times 4$
2. (a) What do you mean by lordosis and kyphosis ?  
(b) Discuss the principle of designing back rest of a chair.  
(c) What is a dynamic chair ?  

$3+5+2$
3. (a) What are preferred posture for different kinds of tasks ?  
(b) How can you assess postural stress on OWAS method ?  
(c) How CG of human body is related to work posture ?  

$3+4+3$
4. (a) What are the health hazards of manual material handling ?  
(b) Explain NIOSH lifting equation.  
(c) What are the recommendations for lifting and carrying loads ?  

$3+3+4$

**[ ENDOCRINOLOGY, REPRODUCTIVE PHYSIOLOGY AND  
FAMILY WELFARE ]**

**UNIT—41**

Answer any *two* questions.

1. (a) What do you know about 'hepatic insulin resistance' in NIDDM ?
- (b) State the insulin resistance syndrome and its components.
- (c) Mention the candidate genes for insulin resistance in NIDDM. 4+3+3
2. (a) Adipose tissue is an endocrine organ — justify the statement.
- (b) State how the mutations of leptin gene and leptin receptor are related to obesity. 5+(3+2)
3. (a) What is pedigree ?
- (b) Mention the types of pedigree.
- (c) Discuss the different components of pedigree analysis. 2+2+6
4. (a) What do you mean by the term 'Physical frailty' ?.
- (b) "Aging is responsible for hormonal changes or hormonal changes in old age are responsible for aging" — justify the statement.
- (c) Briefly elaborate the molecular endocrine mechanism behind aging. 2+2+6

**UNIT—42**

Answer any *two* questions.

1. (a) Write the role of placental GnRH, estradiol and interleukin on hCG synthesis.  
(b) Write the role of Blastocyst's source of MMPs on implantation. 6+4
  2. (a) Discuss the role of cortical reaction on the prevention of polyspermy.  
(b) State the importance of acrosome reaction on fertilization. 6+4
  3. (a) State the recent approach of immuno contraception at post fertilization period.  
(b) What is zone pellucida. 8+2
  4. (a) What are 'anchorage dependent' and 'anchorage independent' cell lines?  
(b) How will you prepare 'serum free' and 'natural' animal cell culture media?  
(2+2)+(3+3)
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