

M.Sc. 1st Semester Examination, 2019

HUMAN PHYSIOLOGY

PAPER – PHY-101

Full Marks : 40

Time : 2 hours

Answer **all** questions

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

UNIT – PHY-101.1

1. Answer any *two* questions from the following : 2×2
 - (a) Mention the driving forces for tertiary structure of protein ?
 - (b) Mention the limitations of Lineweaver-Burk Plot.

- (c) State the significance of NADH/NAD⁺ ratio in TCA cycle regulation .
- (d) Mention two mechanisms of increased glucose utilization by target cells under the influence of insulin.

2. Answer any *two* questions from the following : 4×2

- (a) Mention the components of mitochondrial electron transport chain and overall mode of its action. 2 + 2
- (b) Justify in brief how do chaperones assist in protein folding. 4
- (c) Elaborate the process of 'Myristoylation' as a post translational modification. 4
- (d) Discuss critically the catalytic mechanism of pyruvate dehydrogenase complex. 4

3. Answer any *one* question from the following : 8×1

- (a) Write notes on : 4 +(2 + 2)
 - (i) α -helix structure of protein
 - (ii) Motifs and domains.

- (b) (i) "AT Case consists of separable catalytic and regulatory subunits."—Justify it.
- (ii) How do allosteric changes alter AT Case's substrate binding site? 4 + 4

UNIT—PHY-101.2

4. Answer any *two* questions from the following : 2 × 2
- (a) What is hyperchromatism ?
- (b) What is C-value paradox ?
- (c) What do you know by RNA-editing ?
- (d) What is pleiotropy ?
5. Answer any *two* questions from the following : 4 × 2
- (a) What are 'Bent' and 'Palindromic' DNA ?
Mention the types of DNA polymerases. 4
- (b) What is recessive epistasis ? Citing an example explain this phenomenon. 1 + 3

(c) Describe the 'incomplete dominance' and 'Co-dominance' citing proper examples with checker board. 2 + 2

(d) Describe the process of codon-anticodon interaction. 4

6. Answer any *one* question from the following : 8×1

(a) What is gene mapping ? Construct a chromosome map using the following crossing over frequencies :

CA = 7, AB = 5, BC = 2, AD = 8, CD = 1.

How the crossing over frequencies were calculated using *Drosophila melanogaster* as experimental animal ? 1 + 3 + 4

(b) State the role of dolichol phosphate in oligosaccharide synthesis during protein glycosylation process with suitable diagram. Mention the name of some prime sugar nucleotide of protein glycosylation. How does the sugar nucleotide transport occur through Golgi Cisternae membrane ? 3 + 2 + 3