

**4/H-64 (iv) (Syllabus-2015)**

**2017**

**( April )**

**BIOCHEMISTRY**

**( Honours )**

**( Cell Biology and Physiology )**

*Marks : 56*

*Time : 3 hours*

*The figures in the margin indicate full marks  
for the questions*

**Answer four questions, taking two questions  
from each Part**

**PART—A**

**( Cell Biology )**

1. (a) With appropriate diagrams, describe the structure and functions of—

(i) gram negative cell wall;

(ii) plant cell wall.

3+3=6

(b) What is a bacteriophage? Using a suitable diagram, briefly explain the lytic and lysogenic cycle.

1+7=8

**D72/1491**

**( Turn Over )**

( 2 )

2. (a) In terms of ATP production, there are salient physical differences between mitochondria and chloroplast. Illustrate and discuss. 8
- (b) Write notes on any two of the following : 3×2=6
- (i) Phase-contrast microscopy
  - (ii) Isopycnic density gradient centrifugation
  - (iii) Freeze fracture technique
3. (a) The three major components of the cytoskeleton contribute significantly to the cellular functions in terms of mobility, cell shape and strength. Discuss. 7
- (b) What is cell cycle? Mention the role of CDK/cyclin in its regulation. 1+6=7
4. (a) What is apoptosis? What are the major factors and mediators associated with it? 1+6=7
- (b) What are stem cells? Briefly mention the different types of stem cells and their roles in animal system. 1+6=7

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( Continued )

( 3 )

PART—B  
( Physiology )

5. (a) How are lipids digested, absorbed and transported? 6
- (b) Describe the process of urine formation. 6
- (c) What is Bohr and Haldane effect? 2
6. (a) What is a synapse? Explain how a synaptic vesicle is fused and retrieved. 2+2=4
- (b) Define sarcomere. Explain the mechanism of muscle contraction. 2+8=10
7. (a) What are steroid hormones? Illustrate and describe the mode of action of steroid hormones. 2+5=7
- (b) What is POMC? Explain the generation of different POMC peptides with illustrations. 2+5=7

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D72—400/1491

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