

**BBCCT-103**

## **ASSIGNMENT BOOKLET**

**Bachelor (Honours) Degree in BIOCHEMISTRY (BSCBCH)**

### **CELL BIOLOGY**

**(Valid from 1<sup>st</sup> July, 2020 to 30<sup>th</sup> June, 2021)**



**School of Sciences  
Indira Gandhi National Open University  
Maidan Garhi, New Delhi-110068**

Dear Student,

Please read the section on assignments in the Programme Guide of B.Sc. (Hons.) Biochemistry (BSCBCH) that we sent you after your enrolment. A weightage of 30 percent, as you are aware, has been earmarked for continuous evaluation, **which would consist of one tutor-marked assignment** for this course. The assignment is in this booklet, and it consists of two parts, Part A and B. It covers all blocks of the course. The total marks of all the parts are 100, of which 35% are needed to pass it.

### **SPECIFIC INSTRUCTIONS FOR TUTOR MARKED ASSIGNMENTS (TMA)**

- 1) Write your Enrolment Number, Name, Full Address, Signature and Date on the top right hand corner of the first page of your response sheet.
- 2) Write the Programme Title, Course Code, Course Title, Assignment Code and Name of your Study Centre on the left hand corner of the first page of your response sheet.

**Course Code and Assignment Code may be reproduced from the assignment.**

The top of the first page of your response sheet should look like this:

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**ENROLMENT NO.:**

<b>PROGRAMME TITLE</b>	: .....	<b>NAME:</b>	.....
<b>COURSE CODE</b>	: .....	<b>ADDRESS:</b>	.....
			.....
<b>COURSE TITLE</b>	: .....		.....
<b>ASSIGNMENT CODE</b>	: .....	<b>SIGNATURE:</b>	.....
<b>STUDY CENTRE</b>	: .....	<b>DATE:</b>	.....

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- 3) Read the assignments carefully and follow the specific instructions, if any, given on the assignment itself about the subject matter or its presentation.

- 4) Go through the Units on which the assignments are based (Part A includes Block-1 and 2 and Part B Block 3 and 4). Make some points regarding the question and then rearrange those points in a logical order and draw up a rough outline of your answer. While answering an essay type question, give adequate attention to introduction and conclusion. The introduction must provide a brief interpretation of the question and how you propose to develop it. The conclusion must summarise your response to the question. Make sure that the answer is logical and coherent, and has clear connections between sentences and paragraphs. The answer should be relevant to the question given in the assignment. Make sure that you have attempted all the main points of the question. Once you are satisfied with your answer, write down the final version neatly and underline the points you wish to emphasise. While solving numerical problems, use proper format and give working notes wherever necessary.

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

1. Use only foolscap size paper for your response and tie all the pages carefully. Avoid using very thin paper. Allow a 4 cm margin on the left and at least 4 lines in between each answer. This would facilitate the evaluator to write useful comments in the margin at appropriate places.
2. Write the responses in your own handwriting. Do not print or type the answers. Do not copy your answers from the Units/Blocks sent to you by the University. It is advised to write your answers in your own words as it will help in grasping the study material.
3. Do not copy from the response sheets of other students. If copying is noticed, the assignment will be rejected.
4. Write each assignment separately. All the assignments should not be written in continuity.
5. Write the question number with each answer.
6. The completed assignment should be submitted to the Coordinator of the Study Centre allotted to you. TMAs submitted at any other place will not be evaluated.
7. After submitting the TMA, get the acknowledgement from the Coordinator on the prescribed assignment remittance-cum-acknowledgement card.
8. In case you have requested for a change of Study Centre, you should submit your TMA only to the original Study Centre until the change of Study Centre is notified by the University.
9. If you find that there is any factual error in evaluation of your assignments e.g. any portion of your assignment response has not been evaluated or the total of score recorded on your assignment response is incorrect, you should approach the Coordinator of your study centre for correction and transmission of correct score to headquarters.

# Assignment Cell Biology

Course Code: **BBCCT-103**  
Assignment code: **BBCCT-103/TMA/2020-2021**  
Maximum marks: **100**

**Note: Attempt all questions. The marks for each question are indicated against it.**

## PART-(A)

Maximum marks: 50

1. Fill in the blanks with correct words: [10]
  - i) The bacterial chromosome DNA present in the cytoplasmic region is called the.....
  - ii) In Electron microscopy, the optimum thickness of sectioned specimen is.....
  - iii) The position of centrifuge tubes is changed from vertical to horizontal position during centrifugation in a .....rotor.
  - iv) In eukaryotes, DNA is packaged with the basic protein called as .....
  - v) In eukaryotes, ribosomal RNA (rRNA) is synthesized in the .....
  - vi) .....is the marker enzyme for peroxisomes.
  - vii) The protein complex of mitochondrial inner membrane is the site for.....
  - viii) Gram positive bacterial cell wall is composed of ..... and .....
  - ix) The fibrous network of proteoglycans that surround animal cells/ tissues is.....
  - x) The plus-end directed motor protein in microtubules is .....
2. (a) Define the cell. State the cell theory. [5]  
(b) Draw clearly labeled diagram of an animal and plant cell and point out the differences between them. [5]
3. (a) Differentiate between Optical microscopy and Electron microscopy. [5]  
(b) Discuss the working principle and application of Fluorescence microscope? [5]
4. What is differential centrifugation? Explain how you would separate mitochondrial fraction from animal tissue with suitable diagram. [10]
5. Write short notes on the following: [5+5]
  - (a) Actin filaments
  - (b) Cell-cell interactions

**PART-(B)**

Maximum marks: 50

6. State whether the following statements are true (T) or false (F). If false, point out the error: [10]

- i) Signal peptides are permanent structural parts of a protein. ( )
- ii) All newly synthesized proteins on RER have same signal peptide sequence at their N-terminus.  
( )
- iii) Mitochondrial proteins are translocated in a partially unfolded state. ( )
- iv) Hsp70 is a chaperone that helps to maintain proteins in an unfolded form. ( )
- v) DNA synthesis occurs in G<sub>2</sub> phase of the Cell cycle. ( )
- vi) Bacteria is reproduced via binary fission. ( )
- vii) Cyclins are activated and degraded during cell cycle. ( )
- viii) The activation of Cyclin/CDK complex depends on phosphorylation. ( )
- ix) Necrosis is usually a caspase independent process. ( )
- x) Transformed cells generally divide more rapidly than normal cells. ( )

7. What is Protein trafficking? Explain in details how do proteins transport across the ER membrane. [10]

8. (a) State the role of Golgi Body in Protein sorting. [5]

(b) Discuss the pathway of protein import to the Mitochondrial matrix. [5]

9. (a) Point out the key differences between Mitosis and Meiosis. [5]

(b) Discuss the Cell cycle checkpoints. [5]

10. Write short notes on the following: [5+5]

(a) Apoptosis

(b) Cell renewal