

INTERNAL ASSIGNMENT QUESTIONS
Advanced Diploma in Bio Informatics Semester - I

2026



PROF. G. RAM REDDY CENTRE FOR DISTANCE EDUCATION

(RECOGNISED BY THE DISTANCE EDUCATION BUREAU, UGC, NEW DELHI)

OSMANIA UNIVERSITY

(A University with Potential for Excellence and Re-Accredited by NAAC with "A" + Grade)

DIRECTOR

Prof. N.Ch.Bhadracharyulu
Hyderabad – 7 Telangana State

**PROF.G.RAM REDDY CENTRE FOR DISTANCE EDUCATION
OSMANIA UNIVERSITY, HYDERABAD – 500 007**

Dear Students,

Each student has to write the answers to the Assignment questions with neat own handwriting using **BLUE PEN** (Black Ink not allowed) for each paper. Assignments have to submit after the payment of Rs.500/- by showing the receipt of the same. If the Assignment is not submitted within stipulated time i.e. before the theory exams / last date is treated as absent.

Methodology for writing the Assignments (Instructions) :

1. First read the subject matter in the course material that is supplied to you.
2. If possible read the subject matter in the books suggested for further reading.
3. You are welcome to use the PGRRCDE Library on all working days for collecting information on the topic of your assignments. (10.30 am to 5.00 pm).
4. Give a final reading to the answer you have written and see whether you can delete unimportant or repetitive words.
5. The cover page of the each theory assignments must have information as given in FORMAT below.

FORMAT

1. NAME OF THE STUDENT :
 2. ENROLLMENT NUMBER :
 3. NAME OF THE COURSE :
 4. SEMESTER (I, II, III & IV) :
 5. TITLE OF THE PAPER :
 6. DATE OF SUBMISSION :
6. Write the above said details clearly on every subject assignments paper, otherwise your paper will not be valued.
 7. Tag all the assignments paper wise and submit them in the concerned counter.
 8. Submit the assignments on or before **20th June, 2026** at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

COURSE: ADVANCED DIPLOMA IN BIOINFORMATICS - I SEMISTER

PAPER: I Subject: BIOCOMPUTING AND BIOSTATISTICS

Note: Answer all the Questions. Each Question carries three marks Q10x3M=30M

1. Draw a block diagram of a computer and explain its functions?
2. What is Operating System ? What are its Functions ?
3. Explain about any 5 DOS Internal Commands?
4. Explain functions in C-Language. Write any 5 String Functions?
5. Explain about Normal Distributions with example?
6. What is measure of Central Tendency? What are its measures ?
7. Explain about any 5 DOS External Commands?
8. Write about file handling in C-language?
9. Write a C-Program to find the number of purines and pyrimidines?
10. The survival rate of a species of birds during a harsh winter is 0.7. If the population of 20 birds faces this winter, what is the probability that 15 birds will survive using Binomial Theorem?

COURSE: ADVANCED DIPLOMA IN BIOINFORMATICS – I Semester

Paper: II Subject: Molecular Biology and Genetic Engineering

Note: Answer all the Questions. Each Question carries three marks

Q10x3M=30M

1. Describe an experiment to prove DNA as genetic material.
2. Define genome complexity. Explain about C-value paradox.
3. Discuss about enzymes and proteins involved in prokaryotic DNA replication.
4. Explain how telomeric ends of linear DNA in eukaryotes are maintained.
5. What is DNA damage? List few DNA repair mechanisms.
6. Compare the gene structure of prokaryotes with that of eukaryotes.
7. Describe the process of RNA synthesis in prokaryotes.
8. What is genetic code? Discuss in brief translation in eukaryotes.
9. Discuss about DNA modifying enzymes and their use in Genetic Engineering.
10. Enlist the applications of rDNA technology in Industry.

COURSE: ADVANCED DIPLOMA COURSE IN BIO INFORMATICS – I Semester

PAPER: III, Subject: Biological Databases and Algorithms

Note: Answer all the Questions. Each Question carries three marks Q10x3M=30M

1. Explain the evolution of bioinformatics. Discuss the major milestones that contributed to its emergence as a scientific discipline.
2. What is data mining? Explain their significance in relation to databases used in modern biological research.
3. Describe the major bioinformatics resources available through NCBI, EBI, and ExPASy. Discuss their applications in various subfields of bioinformatics.
4. Compare pairwise and multiple sequence alignment approaches and their biological significance.
5. Describe the dot matrix method for sequence comparison. Explain the construction, interpretation, advantages and limitations.
6. Discuss the major protein databases. Highlight their applications in protein sequence and structure analysis.
7. Demonstrate the role of specialized databases with suitable examples.
8. Explain the principle of dynamic programming in sequence alignment. Illustrate Needleman-Wunsch algorithm with example.
9. What is meant by database searching and how is it performed with computational tools. Explain their working principles and statistical significance.
10. Evaluate the importance of consensus sequences and sequence logos in the identification of functionally important residues.

ADVANCED DIPLOMA IN BIOINFORMATICS – I SEMISTER

Paper: IV Subject: Bio-Python Programming

Note: Answer all the Questions. Each Question carries three marks

Q10x3M=30M

1. Explain built in data types in Python?
2. Write about if-elif-else statement with example?
3. Explain in detail about functions in Python?
4. Explain methods to process list?
5. Explain about Handling Exceptions in Python?
6. What are the Operators in Python ?
7. Explain about loops and Nested Loops in Python?
8. What are Tuples? Explain Operations on Tuples?
9. Write in detail about file handling in Python?
10. Explain about command line arguments in Python?