INTERNAL ASSIGNMENT QUESTIONS
P.G. Diploma in Bio Informatics

Semester - I

ANNUAL EXAMINATIONS
2025

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.Bhatracharyulu
Hyderabad – 7 Telangana State

Dear Students,

Every student of PG Diploma in Bio Informatics semester I has to write and submit **Assignment** for each paper compulsorily. Each assignment carries **30 marks.** The marks awarded to the students will be forwarded to the Examination Branch, OU for inclusion in the marks memo. If the student fail to submit Internal Assignments before the stipulated date, the internal marks will not be added in the final marks memo under any circumstances. The assignments will not be accepted after the stipulated date. **Candidates should submit assignments only in the academic year in which the examination fee is paid for the examination for the first time.**

Candidates are required to submit the Exam fee receipt along with the assignment answers scripts at the concerned counter on or before **07-08-2025** and obtain proper submission receipt.

ASSIGNMENT WITHOUT EXAMINATION FEE PAYMENT RECEIPT (ONLINE) WILL NOT BE ACCEPTED

Assignments on Printed / Photocopy / Typed will not be accepted and will not be valued at any cost. Only HAND WRITTEN ASSIGNMENTS will be accepted and valued.

Students are advised not use Black Pen.

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 **07-08-2025**   at the concerned counter at PGRRCDE, OU on any working day and obtain receipt.

DIRECTOR

INTERNAL ASSESSMENT

PAPER – I : BICOMPUTING AND BIOSTATISTICS

ASSIGNMENT - I

UNIT – I : Answer the following questions (each question carries three marks)   5x3=15

1. Write about Design and Implementation of program.

2. Write about page setup in word document.

3. Write about control and looping statements.

4. Explain Array in C-Language.

5. Explain statements in C with example program.

ASSIGNMENT - II

UNIT – I : Answer the following questions (each question carries three marks)   5x3=15

1. Explain functions in C. with example program.

2. Explain working with files in C. with example program.

3. Explain Measures of Central Tendency and its measures.

4. Explain about correlation coefficient with example.

5. Write normal distribution and its properties.

INTERNAL ASSESSMENT

PAPER – II : MOLECULAR BIOLOYGY & GENETICS ENGINEERING

ASSIGNMENT - I

UNIT – I : Answer the following questions (each question carries three marks)   5x3=15

1. Describe Prokaryotic genome organization using NCBI annotate one genome, identify operons , regulatory sequences and Plasmids.

2. Use ExPASY Translate tool to translate DNA and list observed genetic code.

3. Use Uniprot to find a DNA methylase in bacteria and report its functions and target sequence.

4. Explain tautomeric shift with an example and illustrate how it can lead to mutation using any DNA visualization tool.

5. Use Uniprot to identity post-translational modifications (PTMs) of a selected protein and list at least two types of PTMs with their functional significance.

ASSIGNMENT - II

UNIT – I : Answer the following questions (each question carries three marks)   5x3=15

1. Identify a clustered gene family in any organism and describe its location, function and evolutionary significance (Use Genecards).

2. Identify RNA polymerase subunits in a chosen organism using Uniprot and describe their functions.

3. Retrieve the pBR322 plasmid map using NCBI or SnapGene Viewer and list its key features.

4. Use Ensembi Genome Browser to compare gene density between two organisms and summarize your findings.

5. Use Ensembi to analyze DNA methylarras in a gene and describe its potential regulatory role.

INTERNAL ASSESSMENT

PAPER – III : BIOLOGICAL DATABASES AND ALOGRITHMS

ASSIGNMENT - I

UNIT – I : Answer the following questions (each question carries three marks)   **5x3=15**

1.   Compare CATH classification of two related proteins and note differences in topology.

2.   Use ExPASY ProtParam to analyze a protein structure for its molecular weight and isoelectric point.

3.   Generate a dotplot to compare two DNA sequence and identify regions of similarity and repeats. Interpret the plot.

4.   Perform a global alignment between two DNA sequences using Needleman Wunsch algorithm (or online tool) and interpret.

5.   Use KEGG to identify the metabolic pathway involving the human insulin signalling pathway and list three key genes involved.

ASSIGNMENT - II

UNIT – I : Answer the following questions (each question carries three marks)   **5x3=15**

1. Give a SAM file. Identify and explain the meaning of all the fields in it.

2. Use OMIM to identify the genetic disorder associated with mutations in the human insulin gene (INS) and describe its clinical features.

3. Use BLAST to identify the closes homology of the human INS in mice and report the sequence identity percentage.

4. Briefly describe any one computational tool used in systems biology and its functions.

5. Use the BLOCKS database to identify conserved motifs in a globin protein family. List two conserved blocks and explain their functional importance.

INTERNAL ASSESSMENT

PAPER – IV : BIO PYTHON

ASSIGNMENT - I

UNIT – I : Answer the following questions (each question carries three marks)   **5x3=15**

1.   Explain Data types in Python.

2.   Explain Control Statements in Python.

3.   Explain Loops and Nested loops in Python.

4.   Write about functions in Python.

5.   Write list and types in Python?

ASSIGNMENT - II

UNIT – I : Answer the following questions (each question carries three marks)   **5x3=15**

1. Explain working of Tuples in Functions.

2. Explain about modules in Python.

3. Explain with example. How to use files in Python.

4. What is exception handling in Python with example.

 5. Explain regular expression in Python.

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