

Department of Computer Science
School of Engineering Sciences and Technology
Jamia Hamdard, New Delhi, 110062
Odd Semester Examination-2024
M.Sc. (Computational and Systems Biology and Bioinformatics)
Final Exam –Third Semester
System Biology (MCSB 303)

Total Marks 60, Time 2.5 hours

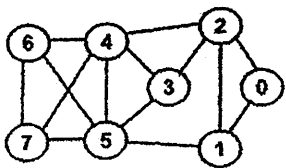
Section A

Students are requested to answer all questions (4x5= 20 Marks)

S.No	Questions	CO	BL
1.	Define Barabási–Albert model. Explain Node degree correlations with an example.	1,2	2
2.	What is a genome model? How do you make a genome-scale metabolic model?	2,3	4
3.	How does metabolic flux analysis work?	2	3
4.	Define Intercellular network. Is ChatGPT a neural network?	3	5

Section B

Students are requested to answer any four questions. (4x10=40 Marks)

S.No	Questions	CO	BL
5.	Calculate the Vertex ID, Degree Centrality, Actual # Links among Neighbors, Max Possible # Links among Neighbors, Local Clustering Coefficient, LCC from this below diagram? 	4	5

6.	What is the Recon3D human metabolic model? What are the applications of metabolomics in humans?			3	4
7.	What is gene circuit design? How do you predict gene function?			3,4	4
8	Define metabolic network and what are the applications of it in bioinformatics?			2,3	4
9	How does the metabolic pathway model help in finding molecular mechanisms of a particular organism			4	5
10	The stores ledger account from the following transaction :			4	5
	Date	Particulars	Units	Price per unit	
	1	Opening balance	500	4	
	5	Purchases	200	4.25	
	12	Purchases	150	4.10	
	20	Purchases	300	4.50	
	25	Purchases	400	4	
	Issues of material were as follows: Jan 4 - 200 units, Jan 10 – 400 units, Jan 15 – 100 units, Jan 19 – 100 units, Jan 26 – 200 units, Jan 30 – 250 units Using the principle of FIFO and LIFO, prepare the stores ledger account.				