

**ACADEMIC
YEAR:
2022-2023**

DR. B. C. ROY COLLEGE OF PHARMACY AND AHS
DR. MEGNAD SAHA SARANI, BIDHANNAGAR, DURGAPUR-713206

TIME TABLE OF B.PHARM 1ST YR 2ND SEMESTER, 2023
 EFFECTIVE FROM 16 TH FEB, 2023

Doc. No.: RTN/B/2023/2/EVEN/RO

DAY	10:00-1:00	1:00-2:00	Sec	2:00-2:50	2:50-3:40	3:40-3:50	3:50-4:40	4:40-5:30	COURSE NAME WITH CODE
MON	PT-296 (Gr.A) PM, PT-297 (Gr.E) SDB, PT298 (Gr.B) SSC, LIB (Gr.C)	LUNCH	A	PT-216,SSM	PT-213,PM	BREAK	PT-215,SSC	PT213, SK	THEORY 1. PT215 Human Anatomy and Physiology - II 2. PT213 Pharmaceutical Organic Chemistry - I 3. PT214 Biochemistry 4. PT216 Pathophysiology 5. HU282 Environmental sciences PRACTICAL 7. PT298 Human Anatomy and Physiology - II 8. PT296 Pharmaceutical Organic Chemistry -I 9. PT297 Biochemistry
			B	PT-215,SSC	PT213, SK		PT-216,SSM	PT-213,PM	
TUE	PT-296 (Gr.B) US, PT-297 (Gr.A) AS, PT298 (Gr.C) SSC, LIB (Gr.D)		A	PT-216, SSSM	HU-282, SB		PT-215, SSC	PT-214, SDB	
			B	PT-215, SSC	PT-214, SDB		PT-216, SSSM	HU-282, SB	
WED	PT-296 (Gr.C) PM, PT-297 (Gr.B) AS, PT298 (Gr.D) SDT, LIB (Gr.E)		A	PT-216, SSSM	PT-213,PM		PT-215,SDT	PT-214, PSP	
			B	PT-215,SDT	PT-214, PSP		PT-216, SSSM	PT-213,PM	
THU	PT-296 (Gr.D) SK, PT-297 (Gr.C) SDB, PT298 (Gr.E) SDT, LIB (Gr.A)		A	PT-216, SSM	PT-213, SK		HU-282, TR	PT-214, SDB	
			B	HU-282, TR	PT-214, SDB		PT-216, SSM	PT-213, SK	
FRI	PT-296 (Gr.E) US, PT-297 (Gr.D) PSP, PT298 (Gr.A) SDT, LIB (Gr.B)		A	HU-282, SB	LIB./INT.		PT-215, AC	PT-214, AS	
			B	PT-215, AC	PT-214, AS		HU-282, SB	LIB./INT.	

SSSM: DR. SHYAMSHREE MANNA, AC: DR. AVIJIT CHATTERJEE; SPD : MR. SAPTARSHI DUTTA; PSP: DR. PARTHA SARATHI PANDA; SK: MR. SONJOY KONAR; SDT: DR. SAGARIKA DEEPHY T; SSM: MR. SAROJ SINGHMURA; PM :MS. PUJA MISHRA; US : DR. UJJWAL SAHOO; SDB: MR.SUDIPTO BAUR, SSC: MRS. SUSHRUTA CHAKRABORTY; TR: MISS TANUSHREE ROY; SB: MR. SOUMEN BANERJEE

ISSUE NO.:1

Prepared by:
 MR. SHOBHAN BOSE
 MR. SONJOY KONAR
 MR. SAPTARSHI DUTTA

Handwritten signatures and dates: 15/2/23, 16/04/2023



REVISION NO.: 0
 Approved By:
 PROF. DR. SUBHAJYATA RAY
 (PRINCIPAL)

Handwritten signature and date: 15/2/23

Workload for PSP = 2h
 Workload for AS = 2h
 Workload for SDB = 4h



B. Pharm. 1st Year 2nd Semester, 2023 2nd Continuous Assessment

SUBJECT: BIOCHEMISTRY (THEORY)

CODE: PT-214 (N)

Time: ALL HAVE TO SUBMIT ON or BEFORE 8TH MARCH, 2023

Full Marks: 25

Instructions: Please read carefully and follow the given instructions.

- 1. Assignment should be written in your own handwriting with blue/black pen.**
- 2. No typing or printing document should be submitted.**
- 3. Mention the page number properly at the right bottom corner of each page.**
- 4. Attach the front page mentioning your name, University roll no, semester, year, Subject, Subject code and topic.**
- 5. Pdf file should be renamed as "Roll no_your name" (eg. 18901918025_Name).**
- 6. Grading will be as per rubrics provided by the Examination cell.**
- 7. You should submit your assignment in the link provided by the Examination cell to upload the PDF of your assignment.**

Q. No	Topic for the assignment of All students	Map. CO	Marks	
1	Define and classify carbohydrate with structure. Write down different chemical properties of carbohydrates.	CO.PT 101N.1	10	
2	Define Bioenergetics. Differentiate between the Exergonic and Endergonic What is Gibb's free energy concept? Explain how Gibb's free energy is correlated with the enthalpy and entropy of a reaction system.	CO.PT 101N.2	10	
3	Define nucleic acid and its significance. Differentiate between DNA and RNA.	CO.PT 101N.1	5	
QUESTION PAPER AND CO. MAPPING		CO	NO OF QUES.	MARKS
		CO. 1	2	15
		CO. 2	1	10
		CO. 3	0	0
		CO. 4	0	0
		CO. 5	0	0
		TOTAL	3	25

PAPER: Biochemistry (Theory)

Time: 1 hr

CODE: PT214 (N)

Full Marks: 25

5*1=5

Answer any five of the questions.

1. If a DNA molecule contains 20% "A", then 'C' present is ----- %. (CO-PT 214.1)
2. What is SSB protein? (CO-PT 214.3)
3. Define standard free energy. (CO-PT 214.2)
4. Which bond is present in the primary structure of a protein? (CO-PT 214.1)
5. Glucose and Galactose differ from each other by _____. (CO-PT 214.1)
6. The study of energy relationships and conversions in biological systems which deals with thermodynamic principles is called _____. (CO-PT 214.2)
7. What is the common composition of DNA, RNA and ATP? (CO-PT 214.1)

Answer any four of the following. (Short answer question)

5*4=20

1. Explain Meselson and Stahl's experiment to prove that DNA replication is semi conservative. (CO-PT 214.3)
2. What do you mean by protein denaturation? Explain it with examples. (CO-PT 214.1)
3. Explain high-energy compounds with examples. (CO-PT 214.2)
4. Deduce the relationship between free energy and the equilibrium constant of a biochemical reaction system. What is redox potential? (CO-PT 214.2)
5. Define electron transport chain (ETC). Discuss about the inhibitors of ETC. (CO-PT 214.2)
6. What is Chargaff's rule and its application in DNA and RNA structure? (CO-PT 214.1)

Dr. B. C. Roy College of Pharmacy and Allied Health Sciences

Durgapur - 713206

B. Pharm. 1st yr 2nd Semester' 2022-2023

PAPER: Biochemistry – Theory

CODE: PT214

SL.	UNIVERSITY	NAME OF THE STUDENT	CA1 (25)	CA2 (25)	CA3 (25)	CA4 (25)
1	18901922001	MADHURIMA KUNDU		24	20	21
2	18901922002	MANOJ KUMAR		22	9	20
3	18901922003	TUTUN MANDAL		21	9	18
4	18901922004	SHAMPA GHOSH		21	5	20
5	18901922005	MD TOHID ANSARI		22	13	20
6	18901922006	JEET CHINA		23	13	19
7	18901922007	OINDRILA NAG		25	21	17
8	18901922008	RAHULDEV MONDAL		17	8	12
9	18901922009	SOURAV GORAIN		18	2	20
10	18901922010	AKASH ROUTH		22	17	A
11	18901922011	NAYAN BISWAS		23	11	19
12	18901922012	TATHAGAT DHAL		24	24	17
13	18901922013	SURAJ KUMAR PANDIT		19	13	20
14	18901922014	PIYALI BEBARTTA		22	6	19
15	18901922015	SAMADRITA GHOSH		23	7	19
16	18901922016	AVINANDAN KHANDA		21	11	17
17	18901922017	SOUMEN KHANRA		22	19.5	19
18	18901922018	RAKHI DHUA		23	6	18
19	18901922019	SUBHADIP BANERJEE		22	5	17
20	18901922020	SAYAN BHATTACHARYAY		22	2	14
21	18901922021	RITRISHA ADHIKARY		23	18.5	18
22	18901922022	ARKA BEZ		21	8	20
23	18901922023	ARNAB SEN		20	8	13
24	18901922024	KASTURI PAL		19	5	17
25	18901922025	KOUSIK DUTTA		21	8	19
26	18901922026	SUBHADEEP NAYAK		18	1	16
27	18901922027	SUBHAM DEY		21	2	17
28	18901922028	SOMENATH PARAMANIK		20	18	19
29	18901922029	ANUSHKA PAN		22	10	20
30	18901922030	SANDIP MAITY		21	2	21
31	18901922031	YEADUL SK		20	A	16
32	18901922032	SHANKHA KARMAKAR		19	1	A
33	18901922033	SUBHAM DEY		22	11	22
34	18901922034	SPANDAN GHOSH		23	13	20
35	18901922035	ABHIJIT GHOSH		19	12	21
36	18901922036	MUNSHI AMAN SAHEIN		22	13	19
37	18901922037	ABHIJIT KHUTIA		21	6	16
38	18901922038	TANMOY DATTA		22	22	17
39	18901922039	AHON GHOSH		20	12	13
40	18901922040	ARYA ROY		20	11	19
41	18901922041	JYOTISHKA MONDAL		19	3	18
42	18901922042	SOURIK KARMAKAR		20	A	17
43	18901922043	GOURANGA ADHIKARI		21	A	15

S. Panik
13/05/23

70	18901922071	MD . NASRAT ALI		21	4	18
71	18901922072	SANDIP PARAMANICK		A	2	19
72	18901922073	SANDIP METYA		21	6	17
73	18901922074	SOUMYADIP MAHATO		22	8	21
74	18901922075	DEBJIT CHAKRABARTI		20	6	17
75	18901922076	NILOY GUHA		21	2	19
76	18901922077	PRALAY KUMAR PAHARI		22	12.5	21
77	18901922078	SAGNIK BANIK		22	8	19
78	18901922079	SAIKAT BISWAS		23	12.5	21
79	18901922080	SOUBHIK MONDAL		20	18	21
80	18901922081	SUMAN JANA		23	23.5	21
81	18901922082	RINTU PAL		23	23	22
82	18901922083	GOUTAM DUTTA		21	15	20
83	18901922084	BISHAL DAS		22	14	20
84	18901922085	ARPITA ROY		24	23	21
85	18901922086	SAUMYADIP KAYAL		23	12	17
86	18901922087	AYAN MONDAL		22	22	19
87	18901922088	KUSHAL SAHA		23	24	A
88	18901922089	PRITHA BANERJEE		21	5	21
89	18901922090	ANKIT DAS		24	19	19
90	18901922091	DEBLEENA GHOSH		23	15	20
91	18901922092	CHAYANIKA KUNDU		23	21	20
92	18901922093	SOUMYADIP PAL		21	18	19
93	18901922094	SHREYA ROUT		21	6	18
94	18901922095	SANDIPAN BARMAN		20	8	18
95	18901922096	ANIMESH MANDAL		22	11	20
96	18901922097	RAHUL GHOSH		21	5	17
97	18901922098	GOLAM MAULA		21	A	18
98	18901922099	SUBHADEEP HATI		20	A	19
99	18901922100	SOUVICK MAITY		22	10	20
100	18901922101	BRATIN ROY		23	15	18
101	18901922102	SUVAJIT BHUNIA		22	24	20
102	18901922103	SHREYASI MAITI		21	19	21
103	18901922104	SANTANU DAS		21	20	19
104	18901922105	JIT SINGHA		22	19.5	19

P. Pandey
13/06/23

44	18901922044	NAYAN DUTTA	21	3	22
45	18901922045	DEEP KARMAKAR	24	10.5	17
46	18901922046	ANISHA SEN	24	24	21
47	18901922047	ABHIK KUMAR BISWAS	21	12.5	19
48	18901922048	NEHA BERA	19	0	16
49	18901922049	ABHIK SARKAR	20	4	20
50	18901922050	HIMADRI SEKHAR MUKHERJEE	20	11	20
51	18901922051	ARNAB GORAI	19	11	14
52	18901922052	SAYAN KUMAR MISRA	21	2	18
53	18901922053	SOUVIK MONDAL	19	10	15
54	18901922054	PRITHWISH GHOSH	21	22	20
55	18901922055	AKASH KUMAR HAZRA	18	4	13
56	18901922056	DIBYAJOTI PAL	19	8	19
57	18901922057	TRISHA CHATTERJEE	22	21	15
58	18901922058	AGNIK KHUTIA	22	8	14
59	18901922059	ARNAB FOUZDAR	22	9.5	A
60	18901922060	SURAJEET GHOSH	23	17	16
61	18901922061	SHIBAM DAS	22	12	19
62	18901922062	RAHUL GORE	20	5	19
63	18901922063	SHIB SANKAR KUMAR	19	9	22
64	18901922064	PRITAM MANNA	22	13.5	18
65	18901922065	ARPITA PARIA	21	14	18
66	18901922066	SAMPRATI MAITY	22	13	16
67	18901922067	SUBHAJIT SANTRA	21	6	16
68	18901922068	SWARNAVA DEY	20	0	A
69	18901922069	KOUSTAV JHA	23	23	18

Handwritten signature and date:
 P. P. M. K.
 13/06/23

Course Completion Status




Academic Year: 2022-2023

Course Name: BIOCHEMISTRY (THEORY)

Course code: PT 214

Taught by:

1. Dr. Partha sarathi Panda
2. Dr. Abhik Si
3. Mr. Sudipto Banz

Date	Proposed number of units to be covered on date as per lesson plan	Units Completed	% of Completion	Reason for incompletion	Signature of Faculty(s)	Signature of Principal/ Director
24/4/23	2	Unit I & Unit II	35%		P. Panda 24/4/23 Abhik 24/4/23	
25/5/23	2	Unit III & Unit IV	45%		P. Panda 25/5/23 Abhik 25/5/23	
13/6/23	1	Unit V	20%		P. Panda 13/6/23 Abhik 13/6/23	



MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : PT214 Biochemistry – Theory

UPID : 002532

Time Allotted : 3 Hours

Full Marks : 70

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following :

[1 x 10 = 10]

- (I) What is mRNA? CO-PT214.3
- (II) What is apoenzyme? CO-PT214.4
- (III) Amino acids are the building blocks of _____ CO-PT214.1
- (IV) Name the pathway for glucose synthesis by non-carbohydrate precursors? CO-PT214.2
- (V) Give example of a ketone body. CO-PT214.2
- (VI) Give example of a purine base of nucleic acids. CO-PT214.1
- (VII) Give example of a non essential Amino acid. CO-PT214.1
- (VIII) Benedict's test is given positive by _____ CO-PT214.1
- (IX) Full form of 5-HT is..... CO-PT214.1
- (X) What is the composition of nucleotide? CO-PT214.1
- (XI) Fumarate is converted by fumarase to CO-PT214.2
- (XII) How many carbon atoms are present in Cholesterol? CO-PT214.1

Group-B (Short Answer Type Question)

Answer any three of the following :

[5 x 3 = 15]

2. What are biomolecules ? classify them with example. CO-PT214.1 [5]
3. Describe any disease associated with glucose metabolism. CO-PT214.2 [5]
4. Write a short note on allosteric inhibition of enzyme. CO-PT214.4 [5]
5. Elaborate the structure of DNA. CO-PT214.3 [5]
6. What is enthalpy and entropy? CO-PT214.2 [5]

Group-C (Long Answer Type Question)

Answer any three of the following :

[15 x 3 = 45]

7. Give the biological significance of proteins and classify them. CO-PT214.1 [15]
8. Write down the various steps in the anaerobic break down of glucose. CO-PT214.2 [15]
9. Describe the replication process of DNA. CO-PT214.3 [15]
10. (a) Describe the biosynthesis of bile acids from cholesterol. CO-PT214.2 [10]
- (b) Write a short note on obesity. CO-PT214.2 [5]
11. Describe the biosynthesis of Pyrimidine nucleotides. CO-PT214.3 [15]

*** END OF PAPER ***

Course Feedback (Summary)

Sub Code PT 213
 Sub Type T

Course	Course	Textb	Sessi	Havin	Cours	Cours	Lab I	Viva-	Havin	Cours	Guida	Suffic	Viva-	Havin	Tot	Perce	Acad
Obj e	books	onal	g Co	e Obj e	nstru	voce	g Co	e Obj e	nice	lent	voce	g Co	e Obj e	nice	lent	voce	g Co
ective	Pace	And	Quest	mplet	ective	Pace	ction	Refle	mplet	ective	Were	Study	Refle	mplet			Year
s Acc	Were	Other	ion P	ed	s Acc	Were	s/ Ha	cted	led	s Acc	Appr	Mate	cted	led			
uratel	Appr	Instr	apers	The	Curatel	Appr	ndout	mpor	The	Curatel	opri	atrials	mpor	The	C		
y Des	opriat	uctio	, Assi	course	y Des	opriats	ant C	ourse	y Des	e (ses	Were	ant C	ourse	cribe	e (the	nal M	gme, I
d (the	ory)	teria	nts	Feel	d (practical	Appr	Aspe	Feel	d (se)	able (Aspe	Feel	ory)			
5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	25	100	2022-2023

Sub Code **PT 214**
 Sub Type T

Course	Course	Textb	Sessi	Havin	Cours	Cours	Lab I	Viva-	Havin	Cours	Guida	Suffic	Viva-	Havin	Tot	Perce	Acad
Obj e	books	onal	g Co	e Obj e	nstru	voce	g Co	e Obj e	nice	lent	voce	g Co	e Obj e	nice	lent	voce	g Co
ective	Pace	And	Quest	mplet	ective	Pace	ction	Refle	mplet	ective	Were	Study	Refle	mplet			Year
s Acc	Were	Other	ion P	ed	s Acc	Were	s/ Ha	cted	led	s Acc	Appr	Mate	cted	led			
uratel	Appr	Instr	apers	The	Curatel	Appr	ndout	mpor	The	Curatel	opri	atrials	mpor	The	C		
y Des	opriat	uctio	, Assi	course	y Des	opriats	ant C	ourse	y Des	e (ses	Were	ant C	ourse	cribe	e (the	nal M	gme, I
d (the	ory)	teria	nts	Feel	d (practical	Appr	Aspe	Feel	d (se)	able (Aspe	Feel	ory)			
5	5	5	4	5	0	0	0	0	0	0	0	0	0	0	24	96	2022-2023

GRADE	PT215	PT213	PT214	PT216	PT298	PT296	PT297	HU282
O	2	10	3	4	9	17	27	10
E	5	33	19	15	29	63	48	91
A	23	23	19	22	50	18	23	3
B	25	12	18	21	13	6	6	0
C	17	16	19	18	2	0	0	0
D	23	8	16	18	1	0	0	0
F	9	2	10	6	0	0	0	0
I	0	0	0	0	0	0	0	0
TOTAL	104	104	104	104	104	104	104	104
NO. OF STUDENTS RECEIVED GRADE C & ABOVE	72	94	78	80	103	104	104	104
PERCENT OF STUDENT ATTAINED 60% & ABOVE	69.23	90.38	75	76.92	99.04	100	100	100
ATTAINMENT INDEX	1	3	2	2	3	3	3	3

Handwritten signature and date:
 J. B. W.
 12/12/23

ACADEMIC YEAR

2021-22

DR. B. C. ROY COLLEGE OF PHARMACY AND AHS
DR. MEGNAD SAHA SARANI, BIDHANNAGAR, DURGAPUR-713206

TIME TABLE OF B.PHARM 1ST YR 2ND SEMESTER, 2022
 EFFECTIVE FROM 16TH MARCH, 2022

Doc. No.: RTN/B/2022/2/EVEN

10:00-1:00	1:00-2:00	Section	2:00-2:50	2:50-3:40	3:40-3:50	3:50-4:40	4:40-5:30	COURSE NAME WITH CODE
PT 296 (Gr.A) PM PT-297 (Gr.E) AS, PT298 (Gr.B) SSC, LIB (Gr.C)	LUNCH	A	PT213, PM	PT215, SDT	BREAK	PT214, PSP	PT216, SSSM	1. PT215 Human Anatomy and Physiology II 2. PT213 Pharmaceutical Organic Chemistry - I 3. PT214 Biochemistry 4. PT216 Pathophysiology 5. HU282 Environmental Sciences PRACTICAL 7. PT298 Human Anatomy and Physiology II 8. PT296 Pharmaceutical Organic Chemistry - I 9. PT297 Biochemistry
		B	PT214, PSP	PT216, SSSM		PT213, PM	PT215, SDT	
PT 296 (Gr.B) PM PT-297 (Gr.A) PSP, PT298 (Gr.C) SSC, LIB (Gr.D)		A	PT213, PM	PT215, SSC		HU282, SG	PT216, SDT	
		B	HU282, SG	PT216, SDT		PT213, PM	PT215, SSC	
PT 296 (Gr.C) SK PT 297 (Gr.B) AS PT298 (Gr.D) SDT, LIB (Gr.E)		A	PT213, SK	HU282, SG		PT214, PSP	PT215, SDT	
		B	PT214, PSP	PT215, SDT		PT213, SK	HU282, SG	
PT-296 (Gr.D) SK PT-297 (Gr.C) PSP, PT298 (Gr.D) SDT, LIB (Gr.E)		A	PT213, SK	HU282, SG		PT216, SDT	PT214, AS	
		B	PT216, SDT	PT214, AS		PT213, SK	HU282, SG	
PT 296 (Gr.E) PM, PT-297 (Gr.D) PSP, PT298 (Gr.A) SSC, LIB (Gr.B)		A	PT214, AS	LIB/INT		PT216, SDT	PT215, SSC	
		B	PT216, SDT	PT215, SSC		PT214, AS	LIB/INT	

Workload for PSP = 4h.
 Workload for AS = 4h

NO: 1
 ION NO: 0

Prepared by:

MR. SHOBHAN BOSE (IC, Routine)
 MR. SONJOY KONAR
 MR. SAPTARSHI DUTTA

(Handwritten signatures and dates)
 16/3/2022



Approved By:

(Handwritten signature)
 PROF. DR. SUBHABRATA RAY
 (PRINCIPAL)



B. Pharm. 1stYear 2ndSemester, 2022ndContinuous Assessment

SUBJECT: BIOCHEMISTRY (THEORY) CODE: PT-214

Full Marks: 25

Instructions: Please read carefully and follow the given instructions.

1. Assignment should be written in own hand writing with blue/black pen.
2. No typing or print document should be submitted.
3. Mention page number properly at the right bottom corner of each page.
4. Attach the front page mentioning your name, University roll no, semester, year, Subject, Subject code and topic.
5. Scan pdf file should be renamed as "Roll no_your name" (eg. 18901918025_Shobhan Bose).
6. Put full signature at the bottom of each page of the assignment. Scanned signature will not be acceptable.
7. MINIMUM PAGE:4-5.
8. Must upload your pdf (combined in one pdf) in the given link on or before 11th April 2022, 12:00 PM.

Link for submission: <https://forms.gle/npMwoEAYMtEVgjT76>

Q. No	Topic for the assignment of All students	Map. CO	Marks	
1	The diabetics should consume a diet low in carbohydrates, having moderate amount of fat and rich in protein. Despite their impaired carbohydrate metabolism and deficient insulin, why carbohydrate are still included in their diet. Explain with the significant role of carbohydrates in human body with proper examples.	CO.PT 214.1	10	
2	Unknown enzyme was added into two test tubes. The first tube contained starch, the second one – sucrose. After 10 min. incubation the solution in the first tube gives the positive Fehling reaction, in the second one – negative. What enzyme was added? Give your answer with proper explanation.	CO.PT 214.4	5	
3	Derive the Michaelis-Menten Equation for enzyme kinetics.	CO.PT 214.4	10	
QUESTION PAPER AND CO. MAPPING		CO	NO OF QUES.	MARKS
		CO. 1	1	10
		CO. 2	0	0
		CO. 3	0	0
		CO. 4	2	15
		CO. 5	0	0
		TOTAL	3	25



DR. B. C. ROY COLLEGE OF PHARMACY & AHS, DURGAPUR

B. Pharm. 1 Year 2nd Semester, 20223rd Continuous Assessment

SUBJECT: BIOCHEMISTRY (THEORY) CODE: PT-214

Full Marks: 25

Time: 30 minutes

ANSWER ALL THE QUESTIONS. EACH QUESTION CARRIES 2 MARKS BUT QUESTION NO 11 CARRIES 5 MARKS.

Q. No	Question	Map. CO	Marks
1	The quantitative study of energy relationships in biological systems obeys A) Bioenergetics B) Laws of thermodynamics C) Laws of thermochemistry D) Laws of chemical energetic	CO.PT 214.2	2
2	ΔG° in a biochemical reaction represents A) Difference in the residual energy of reactants and products at equilibrium. B) Residual energy present in the reactants at equilibrium. C) Free energy changes between reactants and products at equilibrium. D) Energy required in converting one mole of reactants to one mole of products at pH 7.0, 25°C and 1 atmospheric pressure.	CO.PT 214.2	2
3	Which of the following statement is false? A) Standard Redox potential is expressed at pH 7.0 and 25°C. B) Redox potential is a quantitative measure of the tendency of a redox pair to lose or gain electrons. C) The electrons flow from a redox pair with more positive E_0 to another redox pair with more negative E_0 . D) The redox potential (E_0) is directly related to the change in the free energy (ΔG°).	CO.PT 214.2	2
4	Which of the following vitamins of not a component of electron transport chain? A) Nicotinamide B) Ubiquinone C) Biotin D) Riboflavin	CO.PT 214.2	2
5	In oxidative phosphorylation, the ATP production and respiratory chain are linked by A) Chemical methods B) Physical methods C) Chemiosmotic methods D) Conformational changes	CO.PT 214.2	2
6	Identify one of following non-protein compound that has been recognized currently to bring about catalysis in biological system. A) RNA B) Lipids C) DNA D) Carbohydrates	CO.PT 214.4	2
7	The catalytic efficiency of two distinct enzymes can be compared based on which of the following factor? A) K_m B) Product formation C) Size of the enzymes D) pH of optimum value	CO.PT 214.4	2
8	The penicillin antibiotics act as antibiotic by blocking the bacterial cell wall synthesis through inhibiting serine containing enzymes. This phenomenon is an example of A) Allosteric inhibition B) Reversible inhibition C) Irreversible inhibition D) Suicide inhibition	CO.PT 214.4	2
9	An enzyme that catalyses the conversion of an aldose sugar to a ketose sugar would be classified as one of the: A) Transferases B) Isomerases	CO.PT 214.4	2

	C) Oxidoreductases	D) Hydrolases														
10	What is the general mechanism of an enzyme? A) It acts by reducing the activation energy. B) It acts by increasing the activation energy. C) It acts by decreasing the pH. D) It acts by increasing the pH.		CO.PT 214.4	2												
11	Match the following inhibitor with its corresponding mechanism of action.		CO.PT 214.2	5												
	<table border="1"> <thead> <tr> <th>Inhibitor</th> <th>Mechanism of action</th> </tr> </thead> <tbody> <tr> <td>1. Amobarbital</td> <td>A. Inhibits oxidative phosphorylation through dissipating proton gradient across the inner mitochondrial membrane.</td> </tr> <tr> <td>2. Phenformin</td> <td>B. Binds with the enzyme ATP synthase and blocks the proton channels.</td> </tr> <tr> <td>3. Cyanide</td> <td>C. Inhibits electron transfer through NADH-Q reductase.</td> </tr> <tr> <td>4. Oligomycin</td> <td>D. Blocks electron transfer from cytochrome b to cytochrome c1.</td> </tr> <tr> <td>5. Valinomycin</td> <td>E. Inhibits terminal transfer of electrons to molecular O₂.</td> </tr> </tbody> </table>		Inhibitor	Mechanism of action	1. Amobarbital	A. Inhibits oxidative phosphorylation through dissipating proton gradient across the inner mitochondrial membrane.	2. Phenformin	B. Binds with the enzyme ATP synthase and blocks the proton channels.	3. Cyanide	C. Inhibits electron transfer through NADH-Q reductase.	4. Oligomycin	D. Blocks electron transfer from cytochrome b to cytochrome c1.	5. Valinomycin	E. Inhibits terminal transfer of electrons to molecular O ₂ .		
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QUESTION PAPER AND CO. MAPPING			CO	NO OF QUES	MARKS											
			CO. 1	0	0											
			CO. 2	6	15											
			CO. 3	0	0											
			CO. 4	5	10											
			CO. 5	0	0											
			TOTAL	11	25											

Dr. B. C. Roy College of Pharmacy and Allied Health Sciences

Durgapur - 713206

B. Pharm. 1st yr 2nd Semester' 2021-2022

PAPER: Biochemistry

CODE: PT214

SL. NO	UNIVERSITY ROLL NO	NAME OF THE STUDENT	CA1 (25)	CA2 (25)	CA3 (25)	CA4 (25)
1	18901921001	RAHUL DAS		22	19	
2	18901921002	SAYONI SAHA		25	17	
3	18901921003	RAHIT DAS		24	19	
4	18901921004	SUBHADEEP DANDAPAT		22	19	
5	18901921005	BELAL ANSARI		24	19	
6	18901921006	SWARNENDU GHOSH		22	17	
7	18901921007	CHANDRIKA SAHOO		25	21	
8	18901921008	NILADRI ROY		22	19	
9	18901921009	KSHITISH PATRA		20	19	
10	18901921010	PRADIPTA SEKHAR MAITY		22	19	
11	18901921011	SUBARNA GHOSH		21	17	
12	18901921012	SOUMEN PATRA		21	15	
13	18901921013	SOUMIK SAMANTA		22	21	
14	18901921014	DEBSEN MALLIK		22	21	
15	18901921015	SUBHADIP KUNDU		24	19	
16	18901921016	SAYED JUNAID		22	19	
17	18901921017	SOUVIK KUMAR HAZRA		24	19	
18	18901921018	SUBHADEEP MUKHERJEE		25	17	
19	18901921019	MEGHNA BOWRA		24	17	
20	18901921020	SAPTADIP SINHA BABU		23	19	
21	18901921021	ARIJIT SINHAMAHAPATRA		21	19	
22	18901921023	SUBHAM PATRA		21	15	
23	18901921024	KOUSIK GIRI		25	21	
24	18901921025	AKASH BANERJEE		20	19	
25	18901921026	RAJDIP GHOSH		20	19	
26	18901921027	SAYAN BASAK		23	19	
27	18901921028	SABYASACHI PATI		23	23	
28	18901921029	SUPRIYO SHYAM		24	19	
29	18901921030	JOY PAUL		10	17	
30	18901921031	SUBIR MAITY		20	20	
31	18901921032	DEBJIT MANDAL		23	13	
32	18901921033	MD HIDAYAT ANSARI		24	19	
33	18901921034	SUJOY BISWAS		23	21	
34	18901921035	UDIT MONDAL		22	13	
35	18901921036	SOUVIK SAHA		21	17	
36	18901921037	RITWIK PRADHAN		23	17	
37	18901921038	KOYEL NANDI		21	17	
38	18901921039	TIYASA PATRA		25	19	
39	18901921040	DIPENDU MAHATO		24	20	
40	18901921041	SOUMYABRATA SAMANTA		24	21	
41	18901921042	SAMRAT DUTTA		22	15	
42	18901921043	ANURAG DEY		21	17	
43	18901921044	SOUMEN DAS		22	19	
44	18901921045	SUMITH DEY		20	17	
45	18901921046	ATANU MANDI		21	18	
46	18901921047	KAJAL SAPNA BAKHLA		25	21	
47	18901921048	SHIWANI CHAUDHURI		25	15	
48	18901921049	ARINDAM SAHA		22	17	
49	18901921050	UMASANKAR BANERJEE		24	21	
50	18901921051	ANINDA DAS		21	16	
51	18901921052	SUBHASISH KARMAKAR		24	19	
52	18901921053	SANCHITA PATHAK		24	21	
53	18901921054	SANTAM GHOSH		20	15	
54	18901921055	CHAYAN BHANDARI		22	19	
55	18901921056	MAMPI HANSDA		20	15	
56	18901921057	ARPAN KUNDU		23	21	

Sskama
07/08/22

57	18901921058	PRASANSHA PRADHAN		23	21	
58	18901921059	SURAJIT PANDA		22	17	
59	18901921060	SAMRIDDHA BAGCHI		22	21	
60	18901921061	NIRMITA KUNDU		24	21	
61	18901921062	SOUDIPTA KANSARI		23	19	
62	18901921063	ARNAB MONDAL		22	21	
63	18901921064	MONALISA HEMBRAM		23	19	
64	18901921065	RAKESH PAUL		24	14	
65	18901921066	TUFAN GHOSH		21	14	
66	18901921067	SRINATH HALDAR		22	15	
67	18901921068	MISTU BASULI		24	15	
68	18901921069	SANJIB GHOSH		22	19	
69	18901921070	ARITRA SAMANTA		23	14	
70	18901921071	BUDDHADEB BHUNIA		23	15	
71	18901921072	SOUMYADIP PAN		22	18	
72	18901921073	SOHAM DUTTA		21	19	
73	18901921074	ANKAN BANERJEE		22	19	
74	18901921075	ANIMESH BERA		25	21	
75	18901921076	AYON BUG		24	21	
76	18901921077	RAJDEEP CHAKRABORTY		23	19	
77	18901921078	RITAM BARIK		22	21	
78	18901921079	BISHAL GORAI		22	15	
79	18901921080	SURAJIT PANJA		21	19	
80	18901921081	MEARAJ KHAN		21	19	
81	18901921082	ARPAN KUILA		23	15	
82	18901921083	NILADRI GHOSH		22	21	
83	18901921084	SOMNATH MONDAL		25	19	
84	18901921085	NISHU ROY		23	19	
85	18901921086	SANTANU DEY		23	19	
86	18901921087	SOUMI ROY		24	21	
87	18901921088	DEEPANJAN KESH		23	21	
88	18901921089	SURAJ PATRA		25	21	
89	18901921090	RITA MURMU		21	17	
90	18901921091	ANINDITA DAS		23	19	
91	18901921092	MAMPI NAG		24	17	
92	18901921093	JAGANNATH DEY CHOWDHURY		22	19	
93	18901921094	ANISH MONDAL		22	15	
94	18901921095	SUMIT SAU		22	19	
95	18901921096	ANWESHA DUTTA		15	17	
96	18901921097	SAYAN BHOWMIK		23	19	
97	18901921098	BISWAJIT SINGHA		21	18	
98	18901921099	SHREYA DUTTA		23	15	
99	18901921100	ISHIKA HALDER		24	18	
100	18901921101	SAYAN GHOSH		22	17	
101	18901921102	SHUBHAM KUMAR GIRI		22	19	
102	18901921103	RITESH RANJAN MAHATO		23	19	
103	18901921104	SIBAM ROY		25	19	

S. Panda
07/06/22

Course Completion Status

Academic Year: 2021-22

Course Name: BIOCHEMISTRY (THEORY)

Course code: PT-214

Taught by:
 1. Dr. Parthasarathi Panda
 2. Dr. Abhik Si
 3.

Date	Proposed number of units to be covered on date as per lesson plan	Units Completed	% of Completion	Reason for incompletion	Signature of Faculty(s)	Signature of Principal/ Director
6/19/22	2	Unit I & Unit V	40%		Dr. Parthasarathi Panda 6/19/22 Dr. Abhik Si 6/19/22	Dr. Parthasarathi Panda 6/19/22
7/5/22	2	Unit II & Unit IV	40%		Dr. Parthasarathi Panda 7/5/22 Dr. Abhik Si 7/5/22	Dr. Parthasarathi Panda 7/5/22
6/6/22	1	Unit III	20%		Dr. Parthasarathi Panda 6/6/22 Dr. Abhik Si 6/6/22	Dr. Parthasarathi Panda 6/6/22

GRADES	PT215	PT213	PT214	PT216	PT298	PT296	PT297	HU282
O	10	44	14	0	66	52	76	62
E	77	52	79	0	34	34	24	38
A	15	6	9	5	2	10	2	1
B	0	0	0	58	0	6	0	0
C	0	0	0	37	0	0	0	1
D	0	0	0	2	0	0	0	0
F	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0
TOTAL	102	102	102	102	102	102	102	102
NO. OF STUDENTS RECEIVED C & ABOVE	102	102	102	100	102	102	102	102
PERCENT OF STUDENT ATTAINED C & ABOVE	100	100	100	98.04	100	100	100	100
ATTAINMENT INDEX	3	3	3	3	3	3	3	3

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Course Feedback (Summary)

Sub Code PT 213
 Sub Type T

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Sub Code PT 214
 Sub Type T

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62	56	59	58	60	0	0	0	0	0	0	0	0	0	0	295	90.77	2021-2022

ACADEMIC YEAR:

2020-21

DR. B. C. ROY COLLEGE OF PHARMACY AND AHS, DURGAPUR (W.B.)

TIME SCHEDULE FOR VIRTUAL CLASSES

EFFECTIVE FROM 6TH APRIL 2021
SCHEDULE FOR B.PHARM 1ST YR 2ND SEMESTER

DAY	2:00-2:50	2:50-3:40	3:40-3:50	3:50-4:40	4:40-5:30	PRACTICAL (10:30-11:30) PRERECODED CLASS WILL BE UPLOADED
TUE	PT213, SK	PT215, SSM	B	PT214, PSP	HU282, SG	PT296, SK/US
WED	PT214, NG	PT216, SDT	R	PT215, SSM	HU282, SG	PT297, IB/AS
THU	PT216, SDT	PTC203, SB	E	PT213, SK	PT214, PSP	PTC293, SB
FRI	PT215, SSC	PT213, FM	A	PT216, SDT	PT216, SSM	PT298, SG/SnM
SAT	PTC203, SB	PT214, SK	K	PT215, SSC	PT213, FM	

SCHEDULE FOR B.PHARM 2ND YR 4TH SEMESTER

DAY	10:00-10:50	10:50-11:40	11:40-11:50	11:50-12:40	12:40-1:30	PRACTICAL (2:30-3:30) PRERECODED CLASS WILL BE UPLOADED
TUE	PT412, SAM	PT414, SHB	B	PT413, MD	PT416, IC	PT492, SAM/JM
WED	PT413, MD	PT414, SHB	R	PT412, SAM	PT418, AC	PT493, RCG/MD
THU	PT414, SKM	PT412, AKG	E	PT416, SPD	PT418, NG	PT496, SPD/IC
FRI	PT416, SPD	PT413, SNC	A	PT418, NG	PT412, SAM	PT498, AC/SDT
SAT	PT416, IC	PT418, AC	K	PT414, SKM	PT413, SNC	

SCHEDULE FOR B.PHARM 3RD YR 6TH SEMESTER

DAY	2:00-2:50	2:50-3:40	3:40-3:50	3:50-4:40	4:40-5:30	PRACTICAL (10:30-11:30) PRERECODED CLASS WILL BE UPLOADED	PRERECODED CLASS WILL BE UPLOADED IN YOUTUBE
TUE	PT613, PM	PT618, AM	B	PT616, RCG	PT612, AB	PT692, JM/AB/SHB	
WED	PT612, JM	PT611, IB	R	PT613, PM	PT616, SNM	PT693, PM/SKM	
THU	PT616, RCG	PT611, US	E	PT613, SKM	PT618, SSM	PT698, AM/SSM	PT619, SR
FRI	PT612, JM	PT612, AB	A	PT611, US	PT619, AS		
SAT	PT619, AS	PT618, AM	K	PT616, SNM	PT611, IB		PT619, SR

SCHEDULE FOR B.PHARM 4TH YR 8TH SEMESTER

DAY	10:00-10:50	10:50-11:40	11:40-11:50	11:50-12:40	12:40-1:30	PROJECT WORK (2:30-5:30)	PRERECODED CLASS WILL BE UPLOADED IN YOUTUBE
TUE	PT818, SDT	PT810B, SVB	B	PT818, SS	PT810A, SC		PT818, SR
WED	PT810A, US	PT810C, PSP	R	PT817, APC			
THU		PT810A, US	E	PT810B, SVB	PT818, SS		
FRI	PT817, APC		A	PT810C, PSP	PT810B, SVB		
SAT	PT817, APC		K	PT810C, PSP	PT810A, SC		

ISSUE NO.-01, REVISION NO.-0

PREPARED BY

MR. SONUJY KONAR
ASST. PROFESSOR & IC, ROUTINE.

APPROVED BY

PROF. (DR.) SUBHABRATA RAY
PRINCIPAL



DR. B. C. ROY COLLEGE OF PHARMACY & AHS, DURGAPUR

B. Pharm. 1st Year 2nd Semester, 2021 1st Continuous Assessment

SUBJECT: BIOCHEMISTRY (THEORY)

CODE: PT-214 (N)

Full Marks: 25

Instructions: Please read carefully and follow the given instructions.

1. Write the given topics in A4 paper and the number pages must be within 6-8.
2. Before writing your topics, you must write your name, University Roll number, subject paper and code.
3. Must be submitted in a pdf format through scanning your handwritten paper.
4. File name of the PDF file must be renamed as with your University roll no-Name (like 18901918025-Suvajit Hazra).
5. Must upload your pdf (combined in one pdf) in the given link on or before 27th April 2021, 12:00 PM.

Link for submission: <https://forms.gle/V5j2spt5MgiN8zAy6>

Q. No	Topic for the assignment of All students	Map. CO	Marks	
1	Therapeutic and diagnostic applications of enzymes	CO.PT 214N.4	25	
QUESTION PAPER AND CO. MAPPING		CO	NO OF QUES.	MARKS
		CO. 1	0	0
		CO. 2	0	0
		CO. 3	0	0
		CO. 4	1	25
		CO. 5	0	0
		TOTAL	1	25



DR. B. C. ROY COLLEGE OF PHARMACY & AHS, DURGAPUR

B. Pharm. 1st Year 2nd Semester, 2021 2nd Continuous Assessment

SUBJECT: BIOCHEMISTRY (THEORY)

CODE: PT-214 (N)

Time: 30minutes

Full Marks: 25

ANSWER ALL THE QUESTIONS. EACH QUESTION CARRIES 2 MARKS BUT QUESTION NO 11 CARRIES 5 MARKS.

Q. No	Question	Map. CO	Marks
1	Which one of the following is an example of a pentose sugar? A. Glucose B. Ribose C. Galactose D. Fructose	CO.PT 214.1	2
2	Which one of the following statements is true for the Haworth projection given below? <div style="text-align: center; margin: 10px 0;"> </div> A. It is the Haworth projection for α -D- glucose B. It is the Haworth projection for β -D- glucose C. It is the Haworth projection for β -D- fructose D. It is the Haworth projection for α -D- fructose	CO.PT 214.1	2
3	Glucose and galactose are epimers at A. Carbon 2 B. Carbon 3 C. Carbon 4 D. Carbon 6	CO.PT 214.1	2
4	The disaccharide lactose upon hydrolysis by lactase enzyme yields A. Glucose + Maltose B. Fructose + Galactose C. Glucose + Galactose D. Glucose + Glucose	CO.PT 214.1	2
5	The first step in glycolysis is the phosphorylation of glucose by hexokinase, which results in formation of A. Glucose 1-phosphate B. Glucose 6-phosphate C. Glucose 2-phosphate D. Fructose 6-phosphate	CO.PT 214.2	2
6	A nucleoside is composed of A. The phosphate group and the pentose sugar B. The pentose sugar and the nitrogenous base C. The Phosphate group, the pentose sugar and the nitrogenous base D. The nitrogenous base and the phosphate group	CO.PT 214.1	2
7	Identify one of following non-protein compound that has been recognized currently to bring about catalysis in biological system. A. RNA B. Lipids C. DNA D. Carbohydrates	CO.PT 214.4	2
8	What is the ratio of V_o/V_{max} when $[S]=4K_m$? A. 1/5 B. 5/6 C. 4/5 D. 1/2	CO.PT 214.4	2
9	Enzymes increase the rates of reaction by	CO.PT 214.4	2



DR. B. C. ROY COLLEGE OF PHARMACY & AHS, DURGAPUR

	A. Increasing the free energy of activation B. Decreasing the energy of activation C. Changing the equilibrium constant of the reaction D. Increasing the free energy change of the reaction			
10	Allopurinol is used in the treatment of gout by decreasing the uric acid formation through inhibiting the enzyme xanthine oxidase. This phenomenon is an example of A) Allosteric inhibition B) Competitive inhibition C) Non-competitive inhibition D) Suicide inhibition	CO.PT 214.4	2	
11	Match the following enzyme with its corresponding Class Enzyme Class 1. IMP dehydrogenase A. Ligases 2. Hexokinase B. Isomerases 3. Adenylosuccinase C. Oxidoreductase 4. Triosephosphate isomerase D. Transferases 5. Glutamine synthetase E. Lyases	CO.PT 214.4	5	
QUESTION PAPER AND CO. MAPPING		CO	NO OF QUES.	MARKS
		CO. 1	5	10
		CO. 2	1	2
		CO. 3	0	0
		CO. 4	5	13
		CO. 5	0	0
		TOTAL	11	25



DR. B. C. ROY COLLEGE OF PHARMACY & AHS, DURGAPUR

B. Pharm. 1st Year 2nd Semester, 2021 3rd Continuous Assessment

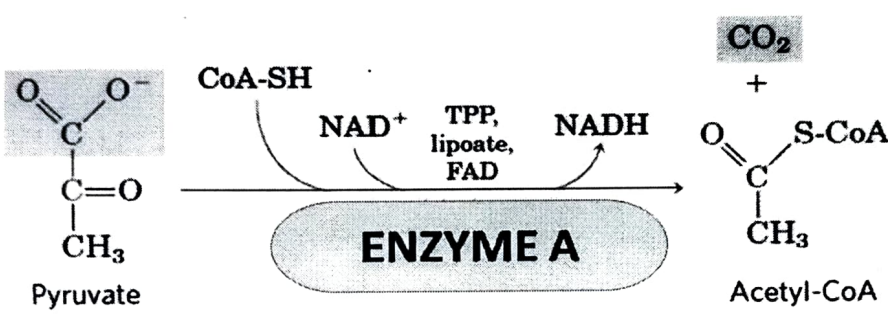
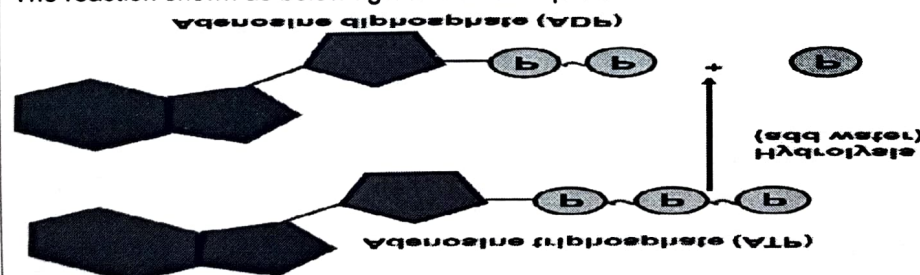
SUBJECT: BIOCHEMISTRY (THEORY)

CODE: PT-214 (N)

Time: 30minutes

Full Marks: 25

ANSWER ALL THE QUESTIONS. EACH QUESTION CARRIES 2 MARKS BUT QUESTION NO 11 CARRIES 5 MARKS.

Q. No	Question	Map. CO	Marks
1	The enzyme which is responsible for the breakdown of Fructose 1,6- biphosphate is? A. Hexokinase B. Aldolase C. Enolase D. None of them	CO.PT 214.2	2
2	Identify the enzyme required for the catalysis of the given reaction?  Pyruvate + CoA-SH + NAD ⁺ + TPP, lipoate, FAD → Acetyl-CoA + CO ₂ + NADH ENZYME A	CO.PT 214.2	2
3	Termination of the TCA cycle takes place with the formation of A. Pyruvic acid B. Citric acid C. Oxaloacetic acid D. Fumaric acid	CO.PT 214.2	2
4	The quantitative study of energy relationships in biological systems obeys A) Bioenergetics B) Laws of thermodynamics C) Laws of thermochemistry D) Laws of chemical energetic	CO.PT 214.2	2
5	The reaction shown as below figure is an example of  A) Exergonic reaction B) Endergonic reaction C) Neutralization reaction D) None of these	CO.PT 214.2	2
6	The relationship between K_{eq} and ΔG° is A) $\Delta G^\circ = RT \ln K_{eq}$ B) $\Delta G^\circ = -RT \ln K_{eq}$ C) $\Delta G^\circ = RK_{eq}$ D) $\Delta G^\circ = -RK_{eq}$	CO.PT 214.2	2
7	The initial product of purine biosynthesis A) AMP B) GMP C) IMP D) UMP	CO.PT 214.2	2
8	Termination of the synthesis of the RNA molecule is signalled by a sequence in the template strand of the DNA molecule, a signal that is recognized by a termination protein, the (A) Rho (ρ) factor (B) σ factor (C) δ factor (D) ϵ factor	CO.PT 214.3	2



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9	If the codon UAC on mRNA changes into UAG as a result of a base substitution in DNA, it will result in (A) Silent mutation (B) Acceptable mis-sense mutation (C) Nonsense mutation (D) Frameshift mutation	CO.PT 214.3	2	
10	Okazaki fragment is related to (A) DNA synthesis (B) Protein synthesis (C) mRNA formation (D) tRNA formation	CO.PT 214.3	2	
11	Match the following enzyme with its corresponding role in genetic information transfer Enzyme Role 1. Helicase A. Catalyzes the sequential transfer of amino acid to the growing chain 2. DNA ligase B. Synthesizes the precursors for mRNAs and small nuclear RNAs 3. Amino acyl tRNA synthetase C. Unwind the DNA molecule by breaking hydrogen bonds 4. RNA polymerase II D. Connects the end of two DNA chains 5. Peptidyl Transferase E. Charging of tRNA with specific amino acids	CO.PT 214.3	5	
QUESTION PAPER AND CO. MAPPING		CO	NO OF QUES.	MARKS
		CO. 1	0	0
		CO. 2	7	14
		CO. 3	4	11
		CO. 4	0	0
		CO. 5	0	0
		TOTAL	11	25



DR. B. C. ROY COLLEGE OF PHARMACY & AHS, DURGAPUR

B. Pharm. 1st Year 2nd Semester, 2021 4th Continuous Assessment

SUBJECT: BIOCHEMISTRY (THEORY)

CODE: PT-214 (N)

Time: 30minutes

Full Marks: 25

ANSWER ALL THE QUESTIONS. EACH QUESTION CARRIES 2 MARKS BUT QUESTION NO 11 CARRIES 5 MARKS.

Q. No	Question	Map. CO	Marks
1	Which of the following vitamins of not a component of electron transport chain? A) Nicotinamide B) Ubiquinone C) Biotin D) Riboflavin	CO.PT 214.2	2
2	Which enzyme complex in the inner mitochondrial membrane does not act as a proton pump in electron transport chain? A) Complex I B) Complex III C) Complex IV D) Complex II	CO.PT 214.2	2
3	What mitochondrial enzyme is affected by oligomycin? A) ATP-synthase B. Succinate-CoQ reductase C. NADH-CoQ reductase D. Cytochrome C oxidase	CO.PT 214.2	2
4	Which of the following oxidation-reduction system has the highest redox -potential? A) Fumarate/ Succinate B) NAD ⁺ /NADH C) Cytochrome b (Fe ³⁺ /Fe ²⁺) D) Cytochrome a	CO.PT 214.2	2
5	The redox potential (E ₀) is directly related to the change in the A) Enthalpy B) Entropy C) Free energy D) None of the above	CO.PT 214.2	2
6	Which of the following compounds blocks electron transfer from cytochrome b to cytochrome c1? A) Piericidin A B) Rotenone C) Antimycin A D) Cyanide	CO.PT 214.2	2
7	Which of the following compounds inhibits terminal transfer of electrons to molecular O ₂ ? A) Carboxin B) British Antilewisite C) Azide D) Chlorpromazine	CO.PT 214.2	2
8	Casein, the milk protein is (A) Metalloprotein (B) Chromoprotein (C) Lipoprotein (D) Nucleoprotein	CO.PT 214.1	2
9	Tertiary structure of a protein describes (A) The order of amino acids (B) Location of disulphide bonds (C) Loop regions of proteins (D) The ways of protein folding	CO.PT 214.1	2
10	In proteins the α-helix and β-pleated sheet are examples of (A) Primary structure (B) Secondary structure (C) Tertiary structure (D) Quaternary structure	CO.PT 214.1	2
11	Match the following enzyme with its corresponding role in genetic information transfer	CO.PT 214.1	5



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Type of Amino acid	Example		
1. Optically inactive amino acid	A. Tryptophan		
2. Sulphur containing amino acid	B. Glutamine		
3. An essential aromatic amino acid	C. Glycine		
4. Acidic amino acid	D. Methionine		
5. Non-polar heterocyclic amino acid	E. Phenylalanine		

QUESTION PAPER AND CO. MAPPING	CO	NO OF QUES.	MARKS
	CO. 1	4	11
	CO. 2	7	14
	CO. 3	0	0
	CO. 4	0	0
	CO. 5	0	0
	TOTAL	11	25

Dr. B. C. Roy College of Pharmacy and Allied Health Sciences

Durgapur - 713206

B. Pharm. 1st yr 2nd Semester' 2021

PAPER: BIOCHEMISTRY (THEORY)

CODE: PT-214

SL. NO	UNIVERSITY ROLL NO	NAME OF THE STUDENT	CA1 (25)	CA2 (25)	CA3 (25)	CA4 (25)
1	18901920001	RAM SWARUP CHATTOPADHYAY	25	25	23	23
2	18901920002	MD TOUHEED AHAMED	23	23	21	18
3	18901920003	SAGNIK DE	25	25	23	12
4	18901920004	NUHIN SK	24	21	23	23
5	18901920005	TAMAL CHATTERJEE	24	23	23	21
6	18901920006	KOUSHIK DAS	25	21	19	23
7	18901920007	SUBRATA DUTTA	25	23	22	19
8	18901920008	TUSHAR DEBNATH	23	25	23	23
9	18901920009	DIBENDU SANNIGRAHI	24	23	23	23
10	18901920010	SATHI GHOSH	25	25	21	19
11	18901920011	SAIKAT GOSWAMI	23	23	23	23
12	18901920012	ANIKET OJHA	24	25	25	19
13	18901920014	POULAMI SINGHA	24	23	23	19
14	18901920015	MAHIMA CHOWDHURY	25	21	25	20
15	18901920016	SAMPRITI MISHRA	24	18	16	14
16	18901920017	SRIJITA BASAK	25	23	25	25
17	18901920018	ABHISHEK CHOWDHURY	25	23	23	25
18	18901920019	BILASH PATRA	24	21	23	19
19	18901920020	PRITAM MONDAL	25	23	23	23
20	18901920021	SHYAMACHARAN BANERJEE	25	25	25	23
21	18901920022	RITWIM MONDAL	24	25	25	23
22	18901920023	SOURAV POULIK	24	21	23	22
23	18901920024	ANUPAM SINGHA ROY	22	23	17	19
24	18901920025	SUBHASH GHOSH	23	25	23	21
25	18901920026	BASTAV MAZUMDAR	24	21	22	19
26	18901920027	MOHAN CHANDRA BARAL	24	25	23	19
27	18901920028	SHANTANU BERA	25	23	23	25
28	18901920029	BITHIKA BANERJEE	25	25	21	22
29	18901920030	ANOMITA DAS	24	25	23	21
30	18901920031	ANKITA DEY	25	25	25	23
31	18901920032	AGNITH MAITY.	25	23	23	20
32	18901920033	SAYAN NANDI	23	25	23	25
33	18901920034	TAPABRATA BHANJA	23	21	23	22
34	18901920035	ARITRA NANDY	24	25	23	20
35	18901920036	ANIRBAN DAN	24	23	23	19
36	18901920037	SUBHANKAR DAS	24	21	23	23
37	18901920038	NEHA DAS	25	25	25	23
38	18901920039	ANKAN MUKHERJEE	24	23	25	22
39	18901920040	SOHAM KUNDU	24	23	21	19
40	18901920041	SUMAN KUMAR PANDA	25	25	25	25
41	18901920042	ARKA GANGULY	23	21	21	21
42	18901920043	ANWESHA BANDYOPADHYAY	25	23	21	21
43	18901920044	INDRANIL KUNDU	23	22	23	19
44	18901920045	RITWIK SAHOO	25	19	25	22
45	18901920046	SOUVIK GHORAI	24	22	23	21
46	18901920047	ARNAB CHOWDHURY	24	22	19	19
47	18901920048	SAYAN KAR	24	25	23	19
48	18901920049	VISHAL KUMAR MAHATO	24	19	23	13
49	18901920050	SARBARTHA DAS	25	23	25	23
50	18901920051	SUMAN CHATTERJEE	24	23	21	18
51	18901920052	SOUBHAGYA MUKHERJEE	23	25	23	21

S. K. Das
8/19/2021

52	18901920053	SOUVIK DUTTA	25	21	25	22
53	18901920054	SUSHOVAN MAITY	24	23	23	18
54	18901920055	RONAJIT MONDAL	25	20	25	22
55	18901920056	ARPAN KAR	24	21	25	22
56	18901920057	BIDHAKAR RAY	23	19	21	19
57	18901920058	ABHISHEK MALIK	24	23	23	24
58	18901920059	JEET BANERJEE	24	25	19	23
59	18901920060	SHOAIB AKHTAR	23	19	21	24
60	18901920061	RANADEEP BOSE	24	16	19	18
61	18901920062	SOYEB AKTAR	24	23	25	23
62	18901920063	SUBHANKAR MODAK	A	A	A	A
63	18901920064	SUMANA DAS	24	25	23	23
64	18901920065	SAYAN HATI	24	23	23	25
65	18901920066	SOUGATA MUKHERJEE	23	23	23	19
66	18901920067	ROHAN MONDAL	24	22	23	21
67	18901920069	ANTARA GUPTA	24	23	25	25
68	18901920070	AMRITA SINGHA	25	25	23	21
69	18901920071	ARIJIT SIL	25	21	23	23
70	18901920072	SUJATA BURNWAL	24	21	25	23

Handwritten signature and date:
 8/9/2021

71	18901920073	PRITAM JANA	23	24	23	21
72	18901920074	SUSHANTA SINGHA	22	23	23	23
73	18901920075	SAPTARSHI BHATTACHARJEE	23	19	25	21
74	18901920076	BIKRAM DAS	25	23	19	21
75	18901920077	BAPI KONAI	24	23	23	23
76	18901920078	SHRABANI DAS	24	21	21	23
77	18901920079	RISHAV SETH	25	21	25	20
78	18901920080	AYUSH SEN	23	25	23	23
79	18901920081	RIK KARAK	23	23	23	23
80	18901920082	MD SAKIL HASAN	23	23	21	21
81	18901920083	SK SAMIM HOSSAIN	24	19	23	23
82	18901920084	VANSHIKA AGARWAL	25	21	25	20
83	18901920085	SAUMYABRATA BHATTACHARYA	25	23	23	25
84	18901920086	SOUGATA GHOSHAL	25	25	23	23
85	18901920087	ANIK MUKHOPADHYAY	24	21	23	19
86	18901920088	TAMAL PARIA	22	19	23	19
87	18901920089	TANUSHREE PRADHAN	25	23	21	19
88	18901920090	MD SAFI	24	22	19	21
89	18901920091	BIBEKANANDA BHUIN	25	23	25	22
90	18901920092	SUMAN MAITY	24	23	23	25
91	18901920093	SAGAR MANDAL	24	23	21	23
92	18901920094	APARESH BERA	24	25	25	23
93	18901920095	RITTIK PAUL	24	25	21	23
94	18901920096	SUBHRAKANTA MANDAL	24	23	19	19
95	18901920097	SOUMYADEEP GUHA	23	21	25	22
96	18901920098	NABANITA SEN	25	24	23	19
97	18901920099	SHANKHASREE SEN	24	23	25	22
98	18901920100	PRITAM DE	24	25	23	19
99	18901920101	SINCHAN KUMAR ROY	25	25	25	25
100	18901920102	AJITESH PATRA	25	23	23	21
101	18901920103	JYOTIRADITYA DAS	24	23	21	21
102	18901920104	PRIYANKA JANA	24	23	21	21

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3/19/2011

Dr. B. C. Roy College of Pharmacy & AHS, Durgapur
College Code - 189

Course Completion Status

Academic Year: 2020-21

Course Name: Biochemistry

Course code: PT-214

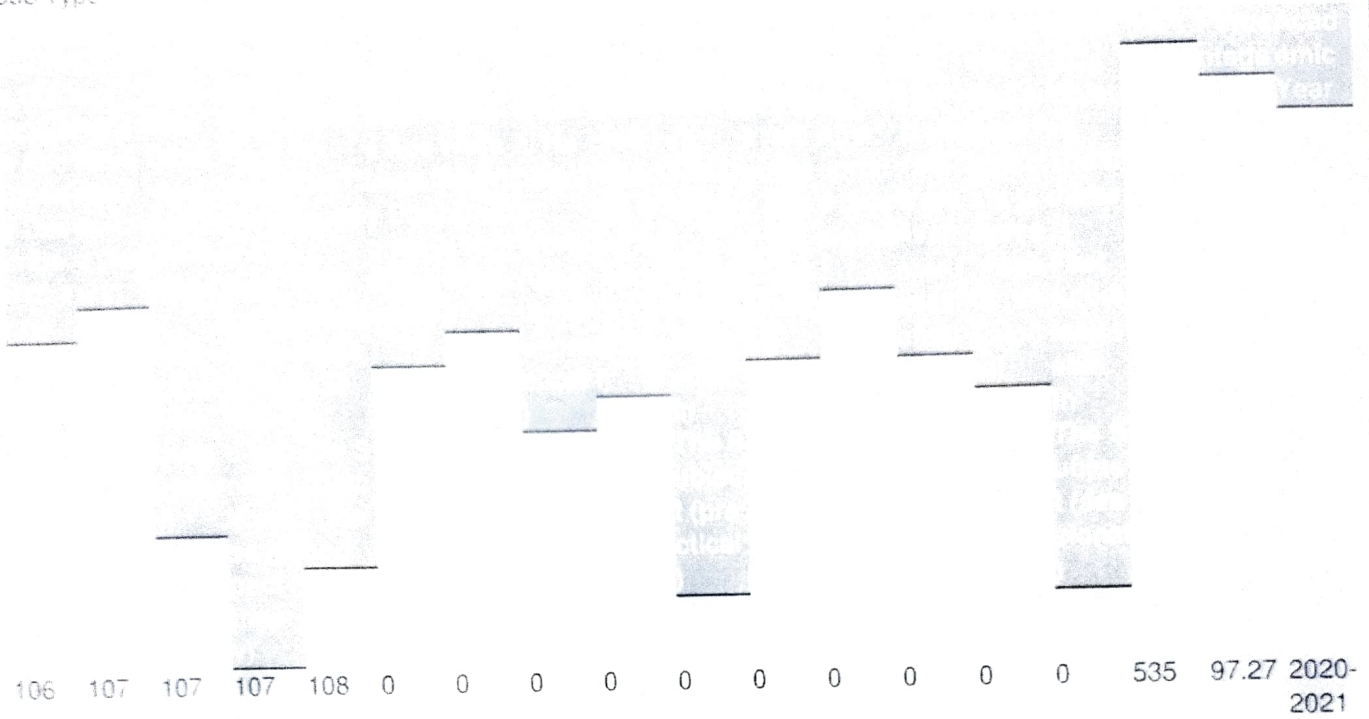
Taught by:

1. DR. PARTHASARATHI PANDA
2. MR. SONJOY KONAR
- 3.

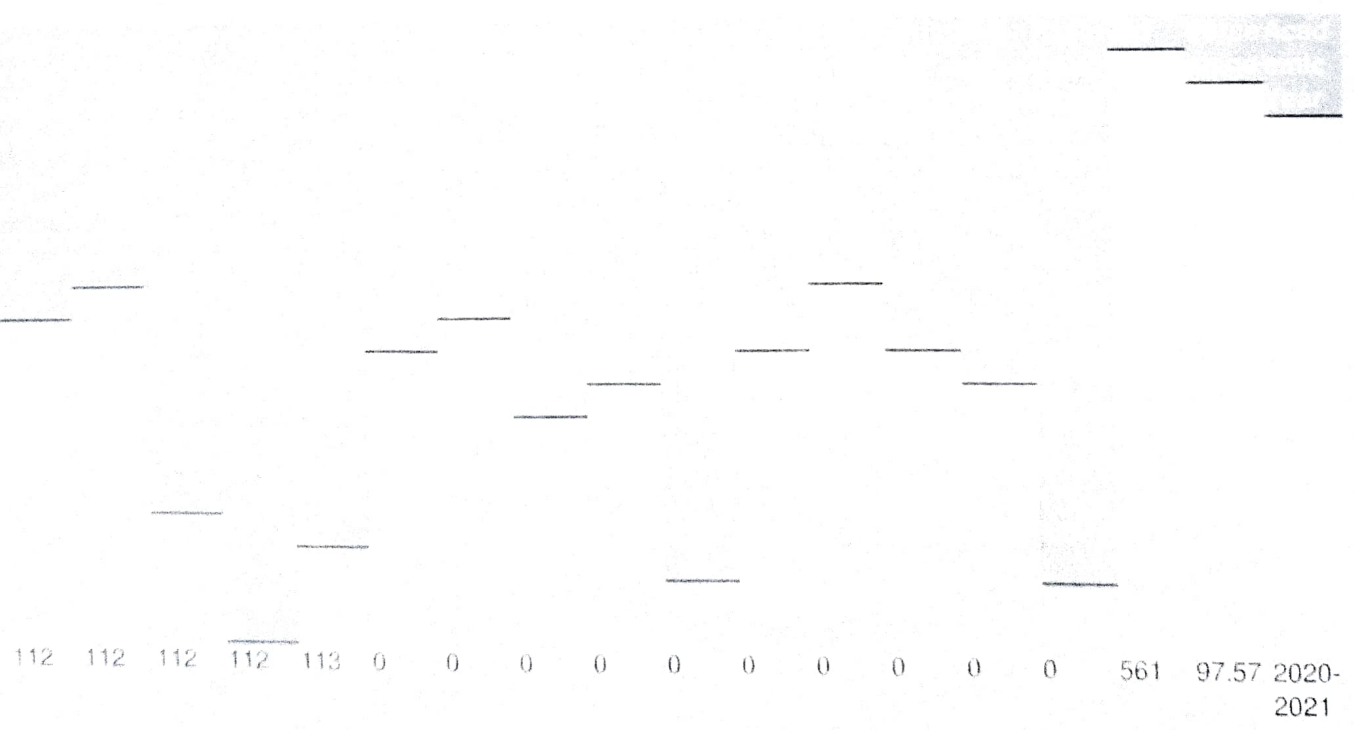
Date	Proposed number of units to be covered on date as per lesson plan	Units Completed	% of Completion	Reason for incompletion	Signature of Faculty(s)	Signature of Principal/Director
08-09-2021 to 11-05-2021	I & V	I & V	40%		P. Panda 08/09/2021	
13-05-21 to 13-07-2021	II & IV	II & IV	40%			
14-07-2021 to 29-07-2021	III	III	20%			

Course Feedback (Summary)

Sub Code PT 213
 Sub Type T



Sub Code **PT 214**
 Sub Type T



Result Analysis for 2nd Semester 2021

GRADES	PT215	PT213	PT214	PT216	PT298	PT296	PT297	HU282	PTC203	PTC293
O	86	0	63	12	81	89	53	71	37	69
E	15	60	36	78	15	12	40	28	57	30
A	0	41	3	12	5	1	8	2	7	2
B	0	1	0	0	1	0	1	0	1	1
C	1	0	0	0	0	0	0	1	0	0
D	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0
TOTAL	102	102	102	102	102	102	102	102	102	102
NO. OF STUDENTS RECEIVED C & ABOVE	102	102	102	102	102	102	102	102	102	102
PERCENT OF STUDENT ATTAINED C & ABOVE	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
ATTAINMENT INDEX	3	3	3	3	3	3	3	3	3	3

10/11

ACADEMIC YEAR:

2019-20

DR. B. C. ROY COLLEGE OF PHARMACY AND AHS
DR. MEGNAD SAHA SARANI, BIDHANNAGAR, DURGAPUR-713206

TIME TABLE OF B.PHARM 1ST YR 2ND SEMESTER, 2020
 EFFECTIVE FROM 14TH JANUARY, 2020

Doc. No.: RTN/B/2020/8/EVEN

DAY	10:00-1:00	1:00-2:00	Section	2:00-2:50	2:50-3:40	3:40-3:50	3:50-4:40	4:40-5:30	5:30-6:30	COURSE NAME WITH CODE
TUE	PT-296 (Gr.A) PM, PT-297 (Gr.B) SKM, PTC-293(Gr.C) SB, LIB(Gr.D)	L	A	PT215 SsM	PT213 SK	B	PT214 PSP	PT216 DC	T U T O R I A L	1. PT215 Human Anatomy and Physiology -II 2. PT213 Pharmaceutical Organic Chemistry - I 3. PT214 Biochemistry 4. PT216 Pathophysiology 5. HU282 Environmental sciences 6. PTC 203 Computer Applications In Pharmacy PRACTICAL 7. PT298 Human Anatomy and Physiology - II 8. PT296 Pharmaceutical Organic Chemistry -I 9. PT297 Biochemistry 10. PTC 293 Computer Applications In Pharmacy
			B	PT214 PSP	PT216 DC		PT213 SK	PT215 SsM		
WED	PT-297(Gr.A) SKM, PT-298(Gr.D) SnM, PTC-293(Gr.B) SB, LIB(Gr.C)	U	A	PT215 SsM	PT213 SK	R	PT214 PSP	PT216 AC		
			B	PT214 PSP	216 AC		PT213 SK	PT215 SsM		
THU	PT-296(Gr.B) PM, PT-297(Gr.D) PSP, PT-298(Gr.C) SNM, PTC-293(Gr.A) SB	N	A	PT215 DC	PT213 SK	E	PT214 PM	HU282 SnM		
			B	PT214 PM	HU282 SnM		PT213 SK	PT215 DC		
FRI	PT-296(Gr.C) SK, PT-298(Gr.A) MD, PTC-293(Gr.D) SB, LIB(Gr.B)	C	A	PT215 DC	PTC203 SB	A	PT214 PM	PT216 AC		
			B	PT214 PM	PT216 AC		PT215 DC	PTC203 SB		
SAT	PT-296(Gr.D) SK, PT-297(Gr.C) PSP, PT-298 (Gr.B) MD, LIB(Gr.A)	H	A	HU282 SnM	PT213 PM	K	PT216 DC	PTC 203 SB		
			B	PT216 DC	PTC203 SB		HU282 SnM	PT213 PM		

PM (Miss Pujja Mishra) SKM (Dr. Sudip Kumar Mondal) SB (Mr. Soumen Banerjee) SK (Mr. Sonjoy Konar) MD (Miss Manami Dhibar)
 SsM (Saroj Singhmurah) DC (Mr. Dipesh Chakraborty) PSP (Dr. Partha Sarathi Parda) SnM (Miss Sanchari Mondal) AC (Dr. Avijit Chatterjee)

ISSUE NO: 1
 REVISION NO: 0

Prepared By
 Mr. Sonjoy Konar
 (Assistant Professor)

Wimal
 07/12/19

*Workload for PSP = 4h
 h h PM = 4h*

Approved By
 Dr. Subhabrata Ray
 (Principal)

PRINCIPAL
 Dr. B. C. Roy College of Pharmacy & A.H.S.
 Bidhannagar, Durgapur-713206

DR. B. C. ROY COLLEGE OF PHARMACY AND AHS
DR. MEGNAD SAHA SARANI, BIDHANNAGAR, DURGAPUR-713206

EFFECTIVE FROM 24TH MARCH, 2020

VIRTUAL TIME TABLE OF B.PHARM 1ST YR 2ND SEMESTER, 2020

DAY	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	COURSE NAME WITH CODE
TUE	PT 213, PM	PT 216, DC	HU 282, SNM	PT 215, DC	1. PT215 Human Anatomy and Physiology -II
WED	PT 214, PSP	PT 213, SK	PT 216, AC	PTC 203, SB	2. PT213 Pharmaceutical Organic Chemistry - I
THU	PT 215, DC	PT 214, PSP	PT 213, SK	PT 214, PM	3. PT214 Biochemistry
FRI	PT 216, DC	PT 215, SSM	PT 214, PM	PT 216, AC	4. PT216 Pathophysiology
SAT	HU 282, SNM	PTC 203, SB	PT 215, SSM	PT 213, SK	5. HU282 Environmental sciences
					6. PTC 203 Computer Applications In Pharmacy

PREPARED BY:

MR. SONJOY KONAR (ASST. PROF.)

*20/3/20 workload for PSP = 2h
 " " PM = 2h*

APPROVED BY:

DR. SUBHARATA RAY (PRINCIPAL)

PRINCIPAL

Dr. B. C. Roy College of Pharmacy & A.H.S.
 Bidhannagar, Durgapur-713206

Dr. B .C. ROY COLLEGE OF PHARMACY & A.H.S
DR. MEGHANAD SAHA SARANI, BIDHANNAGAR,
DURGAPUR-06

B. PHARM. 1ST YEAR 2ND SEMESTER 2020

PAPER- **BIOCHEMISTRY (THEORY)**

PAPER CODE- **PT-214**

ASSIGNMENTS

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
1	18901918022	SYED ABDUL AMEEN		
2	18901919001	ANIRBAN GHOSH		
3	18901919002	SOHAM DUTTA		
4	18901919003	DEBAM RAY		
5	18901919004	SUCHETA KARMAKAR		
6	18901919005	ANITA KUMBHAKAR		
7	18901919006	ARNAB PAL		
8	18901919007	PRODIPTO DAS		
9	18901919008	NIKITA DUTTA		
10	18901919009	SWARAJ NAYEK		
11	18901919010	MEHEDI HASAN		
12	18901919011	SUDIN NAYEK		
13	18901919012	DEBABRATA CHATTOPADHYAY		
14	18901919013	DIPEN RANA		
15	18901919014	SUMAN MONDAL		
16	18901919015	DEBARGHYA KARFORMA		
17	18901919016	ARYADIPTO DASGUPTA		
18	18901919017	ABHISHIKTA SARKAR		
19	18901919018	ANKIT DAS		
20	18901919019	ABDUR RAHAMAN		
21	18901919020	ANGANA CHAKRABORTY		
22	18901919021	ABHIJIT GOSWAMI		
23	18901919022	ARIJIT DEY		
24	18901919023	APURBA PANDIT		
25	18901919025	SOUMYADIP SAHA		
26	18901919026	ANIRBAN DALUI		
27	18901919027	GOPENDRA KRISHNA ROY		
28	18901919028	SUBHANKAR NAG		
29	18901919029	HAREKRISHNA SAHA		
30	18901919030	SOUMYADEEP MAJHI		
31	18901919031	SRINJANI MITRA		
32	18901919032	HIRAK BHOWMIK		
33	18901919033	RUDRA DAS		
34	18901919034	ANKITA KARMAKAR		
35	18901919035	SOUVIK KOWER		
36	18901919036	AVAS PAL		
37	18901919037	GOURAB MANNA		
38	18901919038	ADARSHA GANGULY		
39	18901919039	AVIJIT RUIDAS		
40	18901919040	ANIKET DAS		
41	18901919041	SPURTIKA JANA		
42	18901919042	DEBANWITA LAHA		
43	18901919043	SUBHADIP MANNA		
44	18901919044	DEBAPRIYA DEY		
45	18901919045	SOUVIK GHOSH		
46	18901919046	SNEHASISH KONER		
47	18901919047	DINESH PRADHAN		

S. Panda
20/11/20

Dr. B .C. ROY COLLEGE OF PHARMACY & A.H.S
DR. MEGHANAD SAHA SARANI, BIDHANNAGAR,
DURGAPUR-06

B. PHARM. 1ST YEAR 2ND SEMESTER 2020

PAPER- BIOCHEMISTRY (THEORY)

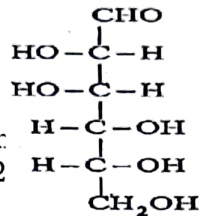
PAPER CODE- PT-214
ASSIGNMENTS

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
48	18901919048	SK DILSHAD ANWAR	The Biochemical Basis of Disease	CO.PT-214.2 and CO.PT-214.4
49	18901919049	ARNAB DEY		
50	18901919050	SOURAV PAUL		
51	18901919051	SATADRU MALLIK		
52	18901919052	SRABONA KONAR		
53	18901919053	SUMAN DAS		
54	18901919054	ARKAPRAVA PAUL		
55	18901919055	SOVAN GIRI		
56	18901919056	SUDARSHINI DUTTA		
57	18901919057	SOURAV GORAI		
58	18901919058	SWAPNAMOIY GAYEN		
59	18901919059	SURYAKANTA DOLUI		
60	18901919060	SOURAV PATRA		
61	18901919061	TAMAN DAS		
62	18901919062	SOUMEN LAHARI		
63	18901919063	SWAGATA ROY		
64	18901919064	SWARUP CHATTERJEE		
65	18901919065	PRIYANKA PANDIT		
66	18901919066	SOURAV GHOSH		
67	18901919067	WASHIM AKTAR		
68	18901919068	TRIDIB NAYEK		
69	18901919069	KRISHNENDU BHOWMICK		
70	18901919070	MD SAHIDUJJAMAN		
71	18901919071	SAYED ANOWAR		
72	18901919072	SOMNATH SINGHA		
73	18901919073	SUMANA PAL		
74	18901919074	MOHITOSH PATRA		
75	18901919075	RAJ ALI		
76	18901919076	SUSOVAN DAS		
77	18901919077	SARMISTHA MONDAL		
78	18901919078	SUDIP MONDAL		
79	18901919079	SUBHANKAR PAL		
80	18901919080	KOUSHIK DAS		
81	18901919081	ISHIKA DEY		
82	18901919082	SUDIP MAJI		
83	18901919083	RAHUL MALLICK		
84	18901919084	RITAM PATRA		
85	18901919085	SAYANTA SINGHA		
86	18901919087	PRIYANGI GHOSAL		
87	18901919088	ROHIT CHATTERJEE		
88	18901919089	JAGADISH SHIL		
89	18901919090	MANOJ MANA		
90	18901919091	SAHADEV DAS		
91	18901919092	JAYITA PAL		
92	18901919093	SHREYA DATTA		
93	18901919094	PRIYAM KUMAR GIRI		
94	18901919095	RAJAT SAMAI		
95	18901919096	HIRAK DYUTI GANGULY		
96	18901919097	INDRAJIT PAL		
97	18901919098	SANGRAM RAKSHIT		
98	18901919099	RAJAT DANDAPAT		
99	18901919100	MAINUL HASAN		
100	18901919101	NIRUPAM PATTANAYAK		
101	18901919102	MD MAINUL HASSAN		

P. Panda
20/02/20

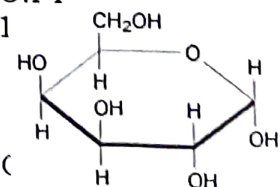
Full Mark: 25

Question No	Question	Mapping
1	Predict the conformer of the given structure of D-Mannose: A) 2S, 3S, 4R, 5R B) 2R, 3S, 4S, 5R C) 2R, 3R, 4S, 5S D) 2R, 3R, 4S, 5R	CO CO.PT 214.1
2	Glucose and Galactose differs from A) Change in conformation at C2 at C4 C) Change in conformation at C3; D) Change in conformation at C5	CO.PT 214.1
3	Formula for monosaccharide is A) $(CH_2O)_n$ B) C_nH_{2n} Both A and B D_ none of above	CO.PT 214.1
4	A nucleoside is composed of: A) The phosphate group and the pentose sugar B) The pentose sugar and the nitrogenous base C) The Phosphate group, the pentose sugar and the nitrogenous base D) The nitrogenous base and the phosphate group	CO.PT 214.1
5	The initial product of purine biosynthesis A) AMP B) GMP C) IMP D) UMP	CO.PT 214.2



Full Mark: 25

Question No	Question	Mapping
1	The structure given below is: A) β -D-Glucose B) L-Glucose C) Galactose D) α -D-Glucose	CO CO.PT 21
2	When L-Glucose is written in open	CO



- chain form 214.1
- A) Three OH groups are on the right and one OH group is on the left.
- B) One OH groups are on the right and three OH group is on the left.
- C) Two OH groups are on the right and two OH groups are on the left.
- D) Four OH groups are on the right.
- 3 How many kinds of nitrogenous bases are found in nucleic acids? CO.PT 214.1
- A) One B) Three
- C) Five D) Seven
- 4 Which of the following statement state a difference in the compositions of a deoxyribonucleotide and a ribonucleotide? CO.PT 214.1
- A) DNA monomer has a deoxyribose, whereas RNA monomer has a ribose
- B) DNA monomer does not have uracil, whereas RNA monomer does not have thymine
- C) DNA usually exists as double helix, whereas RNA usually exists as a single strand
- D) All of the above
- 5 The amino acids required for the biosynthesis of purines CO.PT 214.2
- A) Glycine, Glutamine and Aspartate
- B) Glycine, Glutamate and Aspartate
- C) Glycine and Glutamine
- D) Aspartate and Glutamine

ES/AmDa
11/03/20

CO	NO. of ques.	Marks.
CO.PT.214.1	4	20
214.2	21	5
total	5	25

9. Single Strand Binding Proteins maintains the DNA template in the single strand form in order to

Check all that apply

- prevent the dsDNA formation
 protect the vulnerable ssDNA from nucleases
 relieve torsional strain resulting from helicase induced unwinding
 form phosphodiester bonds

COPT214.3

10. Which of the following enzymes adds DNA to the ends of chromosomes to avoid loss of genetic material with duplication?

Check all that apply

- Helicase
 Telomerase
 Polymerase
 Primase

COPT214.3 &
COPT214.9

11. Which of the following enzymes act as nick sealing enzyme in DNA replication?

Check all that apply

- Primase
 Telomerase
 DNA Ligase
 DNA Topoisomerase

COPT214.3 &
COPT214.9

12. The enzyme that (during replication) proceeds along one of the strands of a DNA molecule adding deoxy-nucleotide-triphosphates to hydrogen bond with their appropriate complementary dNTP on the other single strand and to form a covalent phosphodiester bond with the previous nucleotide of the same strand is called:

Check all that apply

- DNA Polymerase I
 DNA Polymerase II
 DNA Polymerase III
 Primase

COPT214.3 &
COPT214.9

13. Which of the following compounds inhibit human topoisomeres are used as anticancer drugs?

Check all that apply

- Etoposide
 Doxorubicin
 6-Mercaptopurine
 5-Fluorouracil

COPT214.9

14. What is the role of topoisomeres in eukaryotic DNA replication?

Check all that apply

- Topoisomerase enzymes cut, uncoil and reseal the double stranded DNA
 Topoisomerase enzymes bind to the origin of replication sites within double stranded DNA
 Topoisomerase enzymes open up the double stranded DNA at the replication fork
 Topoisomerase enzymes join the Okazaki fragments together with phosphodiester bonds

COPT214.3 &
COPT214.9

15. True replication of DNA is possible due to

Check all that apply

- Hydrogen bonding
 Phosphate backbone
 Complementary base pairing rule
 None of the above

COPT214.3

16. EC 1.2.1.4 refers to the type of enzyme which belongs to

Check all that apply

- Oxidoreductases which acts on alcohol groups and NAD⁺ is used as acceptor
 Oxidoreductases which acts on aldehyde groups and O₂ is used as an acceptor
 Oxidoreductases which acts on aldehyde groups and NAD⁺ is used as acceptor
 None of the above

COPT214.9

17. What is the ratio of V₀/V_{max} when [S]=K_m?

Check all that apply

- 1/8
 1/6
 4/5
 1/2

COPT214.9

Flora
24/10/20

Timestamp	Email Address	Score	FULL NAME	UNIVERSITY ROLL	Subject Code	Which of the following e	When DNA replication star	During the replication of DI	The elongation of the leadi
4-27-2020 16:26:49	arnabpal799@gmail.com	5 / 25	Arnab pal	18901919006	PT 214	DNA polymerase II	The hydrogen bonds betw	Kornberg fragments	Progress away from the re
4-27-2020 16:38:12	shreyadatta777@gmail.com	10 / 25	Shreya Datta	18901919093	PT 214	DNA polymerase III	The leading strand produ	Okazaki fragments	Occur in 3'-5' direction
4-27-2020 16:40:18	arijitdgp191@gmail.com	9 / 25	ARIJIT DEY	18901919022	PT 214	DNA polymerase I, DNA	The hydrogen bonds betw	Okazaki fragments	Occur in 3'-5' direction, Prc
4-27-2020 16:43:50	hirakganguy.123@gmail.c	2 / 25	Hirakdyuti Ganguy	18901919096	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re
4-27-2020 16:45:30	swapnamoygayen2001@g	11 / 25	Swapnamoy Gayen	18901919070	PT 214	DNA polymerase III	The bonds between the ni	Okazaki fragments	Progress away from the re
4-27-2020 16:45:41	imdsahid2000@gmail.com	9 / 25	Md Sahidujaman	18901919049	PT 214	DNA polymerase I	The leading strand produ	Satellite fragments	Occur in 3'-5' direction
4-27-2020 16:46:41	arnabdey9382@gmail.com	2 / 25	Arnab dey	18901919020	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re
4-27-2020 16:46:49	anganachakraborty2001@	10 / 25	Angana chakraborty	18901919019	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re
4-27-2020 16:47:02	abdurjesun07@gmail.com	9 / 25	Abdur Rahaman	18901919087	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re
4-27-2020 16:48:45	ssaha0915@gmail.com	11 / 25	soumyadip saha	18901919025	PT 214	DNA polymerase III	The phosphodiester bonds	Satellite fragments	Occur in 3'-5' direction, De
4-27-2020 16:48:54	ghosalpriyangi@gmail.com	20 / 25	Priyangi Ghosal	18901919087	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:49:04	majhisoumyadeep@gmail.	13 / 25	Soumyadeep Majhi	18901919030	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:49:15	souravpapai98@gmail.com	19 / 25	SOURAV PAUL	18901919050	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:49:21	duttan383@gmail.com	19 / 25	Nikita Dutta	18901919008	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:49:26	tridib.bhai2001@gmail.com	19 / 25	TRIDIB NAYEK	18901919068	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:50:01	rohitchatterjee8016@gmai	15 / 25	Rohit Chatterjee	18901919088	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:50:27	prityroy0310@gmail.com	11 / 25	Swagata Roy	18901919063	PT 214	DNA polymerase III	The hydrogen bonds betw	Double helix fragments	Depend on the action of DI
4-27-2020 16:50:55	ankitdas86884@gmail.com	11 / 25	Ankit das	18901919018	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Occur in 3'-5' direction
4-27-2020 16:51:52	dilshad3062000@gmail.co	13 / 25	SK DILSHAD ANWAR	18901919048	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:52:08	souvikkower12345@gmail	0 / 25	SOUVIK KOWER	18901919035	PT 214	DNA polymerase I, DNA	The phosphodiester bonds	Satellite fragments, Double	Progress away from the re
4-27-2020 16:53:56	pindrajit799@gmail.com	19 / 25	Indrajit Pal	18901919097	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Produce Okazaki fragment
4-27-2020 16:55:03	swarupchatterjee784@gm:	15 / 25	Swarup Chatterjee	18901919064	PT 214	DNA polymerase II	The hydrogen bonds betw	Okazaki fragments	Produce Okazaki fragment
4-27-2020 16:56:23	kumbhakaranita2001@gm	12 / 25	ANITA KUMBHAKAR	18901919005	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Produce Okazaki fragment
4-27-2020 16:57:08	sahebchatterjee567@gma	3 / 25	Debabrata Chattopadh	18901919012	PT 214	DNA polymerase alpha	The bonds between the ni	Kornberg fragments	Produce Okazaki fragment
4-27-2020 16:57:30	msudip422@gmail.com	17 / 25	SUDIP Mondal	18901919078	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Occur in 3'-5' direction
4-27-2020 16:57:33	ritampatra69@gmail.com	8 / 25	Ritam patra	18901919084	PT 214	DNA polymerase alpha	The phosphodiester bonds	Okazaki fragments	Occur in 3'-5' direction
4-27-2020 16:57:36	majisudip883@gmail.com	7 / 25	Sudip Maji	18901919082	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:57:36	imsayed2016@gmail.com	15 / 25	SAYED ANOWAR	18901919071	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re
4-27-2020 16:58:06	koushikdas78650@gmail.c	11 / 25	Koushik Das	18901919080	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re
4-27-2020 16:58:06	srinjanimitra8257@gmail.c	14 / 25	Srinjani Mitra	18901919031	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:58:31	priyamkumar8292@gmail.	13 / 25	Priyam Kumar Giri	18901919094	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:58:38	subhankaramarpur@gmail	13 / 25	Subhankar pal	18901919079	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:58:51	suryakantadolui@gmail.co	13 / 25	Suryakanta Dolui	18901919059	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:59:12	souravpatra992@gmail.co	11 / 25	Sourav Patra	18901919060	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re
4-27-2020 16:59:19	srobonakonar39@gmail.cc	17 / 25	Srabona Konar	18901919052	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 16:59:36	abhijit.ag0876@gmail.com	7 / 25	Abhijit Goswami	18901919021	PT 214	DNA polymerase I	The hydrogen bonds betw	Kornberg fragments	Progress away from the re
4-27-2020 16:59:39	sumanasinha721@gmail.c	18 / 25	Sumana Pal	18901919073	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Produce Okazaki fragment
4-27-2020 16:59:46	sahadevdas558@gmail.co	17 / 25	Sahadev Das	18901919091	PT 214	DNA polymerase III	The leading strand produ	Okazaki fragments	Depend on the action of DI
4-27-2020 16:59:59	susovandas06@gmail.com	20 / 25	Susovan Das	18901919076	PT 214	DNA polymerase III	The leading strand produ	Okazaki fragments	Depend on the action of DI
4-27-2020 17:00:04	pal441268@gmail.com	17 / 25	Sourav Gorai	18901919057	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:00:16	sarmistham124@gmail.co	9 / 25	Sarmistha Mondal	18901919077	PT 214	DNA polymerase III	The phosphodiester bonds	Okazaki fragments	Occur in 3'-5' direction
4-27-2020 17:00:17	sudinnayek2000@gmail.cc	16 / 25	SUDIN NAYEK	18901919011	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 17:00:18	avaspa19@gmail.com	12 / 25	Avas Pal	18901919036	PT 214	DNA polymerase II	The hydrogen bonds betw	Okazaki fragments	Depend on the action of DI
4-27-2020 17:00:21	suchetakarmakar11@gma	17 / 25	Sucheta Karmakar	18901919004	PT 214	DNA polymerase III	The hydrogen bonds betw	Okazaki fragments	Progress away from the re;

4-27-2020 17:00:24	ishikaday24@gmail.com	16 / 25	Ishika dey	18901919081	PT 214	DNA polymerase III	The phosphodiester bonds Okazaki fragments	Occur in 3'-5' direction
4-27-2020 17:00:29	somnathsingha2001@gmail.com	13 / 25	Somnath Singha	18901919072	PT 214	DNA polymerase II	The hydrogen bonds betw Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:00:33	sahamaddutta072000@gmail.com	15 / 25	SOHAM DUTTA	18901919002	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:00:43	roygopendrakrishna@gmail.com	14 / 25	Gopendra krishna Roy	18901919027	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Progress away from the re
4-27-2020 17:00:43	amirahulmallick@gmail.com	6 / 25	Rahul Mallick	18901919083	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	
4-27-2020 17:00:46	swarajnayek1998@gmail.com	14 / 25	Swaraj Nayek	18901919009	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:00:48	washimmondal427@gmail.com	10 / 25	Washim Aktar	18901919067	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:00:50	ruidasavijit3@gmail.com	11 / 25	Avijit Ruidas	18901919039	PT 214	DNA polymerase III	Okazaki fragments	Depend on the action of Df
4-27-2020 17:00:53	sudarshinidutta99@gmail.com	17 / 25	Sudarshini Dutta	18901919056	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:01:07	aryadiptadasgupta28@gmail.com	15 / 25	Aryadipto Dasgupta	18901919016	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:01:45	sangramrakshil852@gmail.com	17 / 25	SANGRAM RAKSHIT	18901919098	PT 214	DNA polymerase III	The leading strand produc Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:01:47	sayantasingha727@gmail.com	4 / 25	Sayanta Singha	18901919085	PT 214	DNA polymerase alpha	The phosphodiester bonds Satellite fragments	Produce Okazaki fragment
4-27-2020 17:01:50	gourabmanna344@gmail.com	16 / 25	Gourab Manna	18901919037	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:01:51	dasaniket645@gmail.com	15 / 25	Aniket Das	18901919040	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:01:56	prodiptodas374@gmail.com	17 / 25	Prodipto Das	18901919007	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:01:56	girisovan2864@gmail.com	4 / 25	Sovan Giri	18901919055	PT 214	DNA polymerase III	The leading strand produces Okazaki fragments.	Progress away from the re
4-27-2020 17:01:57	ib.debanwitalaha@gmail.com	16 / 25	Debanwita Laha	18901919042	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:02:05	nudradiganta@gmail.com	11 / 25	Rudra das	18901919033	PT 214	DNA polymerase III	Okazaki fragments	Occur in 3'-5' direction
4-27-2020 17:02:36	anirbandalui15@gmail.com	10 / 25	Anirban dalui	18901919026	PT 214	DNA polymerase III	The hydrogen bonds betw Kornberg fragments	Depend on the action of Df
4-27-2020 17:02:47	rajat.agaya@gmail.com	10 / 25	Rajat Dandapat	18901919099	PT 214	DNA polymerase III	The phosphodiester bonds Okazaki fragments	Occur in 3'-5' direction
4-27-2020 17:02:59	pattanayakcottu@gmail.com	13 / 25	Nirupam Pattanayak	18901919101	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:03:10	mohitoshp76@gmail.com	12 / 25	Mohitosh patra	18901919014	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Occur in 3'-5' direction
4-27-2020 17:03:43	jayitapal1027@gmail.com	12 / 25	Jayita Pal	18901919092	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:05:53	adarshaganguly303@gmail.com	3 / 25	Adarsha Ganguly	18901919038	PT 214	DNA polymerase III	The leading strand produc Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:07:10	dp810346@gmail.com	10 / 25	Dinesh Pradhan	18901919047	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Produce Okazaki fragment
4-27-2020 17:07:27	abhishiktasarkar2001@gmail.com	15 / 25	Abhishikta sarkar	18901919017	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:08:44	ranadipen0@gmail.com	14 / 25	Dipen Rana	18901919013	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:09:34	karmakarakanta2000@gmail.com	14 / 25	Ankita Karmakar	18901919034	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Occur in 3'-5' direction
4-27-2020 17:09:47	soumenlahari2000@gmail.com	10 / 25	Soumen Lahari	18901919062	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:09:47	krishnendubhowmick77@gmail.com	11 / 25	Krishnendu Bhowmick	18901919069	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:10:02	shreyajana20@gmail.com	16 / 25	Spurtika Jana	18901919041	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df
4-27-2020 17:10:47	subhadipmanna2001@gmail.com	12 / 25	Subhadip Manna	18901919043	PT 214	DNA polymerase III	The hydrogen bonds betw Okazaki fragments	Depend on the action of Df

The $\frac{1}{2}$ of a double reciprocal When (S) is equal to Km, v match the enzyme with its Match the enzyme Match the enzyme w Match the enzyme v Which of the following reac The Michaelis-Menten Mode of DNA replication in slope, $KM/VMAX$, y-intercept The velocity of the reaction is equal to Vmax. Synthesize primers using free NTPs as the substrate and the ssDNA as the ter 3' to 5' exonuclease activi States that the rate of Bidirectional slope, $KM/VMAX$, y-intercept The velocity of the reaction Form a phosphodiester boi Catalyses the coi Unwind the double Synthesize primers u Unwind the double t 3' to 5' exonuclease activit Postulates the formati Bidirectional slope, $KM/VMAX$, y-intercept The velocity of the reaction Replaces the nucleotides Synthesize prime Form a phosphodi Unwind the double ht Catalyses the conv 5' to 3' exonuclease activi Postulates the formati Semiconservative, Unidirec Enzyme is completely saturated with substrate. Enables us to calculat Semiconservative slope, $KM/VMAX$, y-intercept, $1/VMAX$ 3' to 5' exonuclease activity Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Catalyses the conversion c Synthesize primers using free NTPs as the substrate and Form a phosphodi: 3' to 5' exonuclease activity Semiconservative slope, KM , y-intercept, $1/V$ The velocity of the reaction is independent of substrat Catalyses the conversion of an aldose sugar to a ketose sugar 3' to 5' endonuclease activ States that the rate of Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. 3' to 5' exonuclease activity Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. 3' to 5' exonuclease activity Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. 3' to 5' exonuclease activit Postulates the formati Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. 3' to 5' exonuclease activit Postulates the formati Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Synthesize primers using f: Synthesize primers Synthesize primers: Synthesize primers u: Synthesize primers 3' to 5' exonuclease activit Postulates the formati Bidirectional slope, KM , y-intercept, $1/V$ Half the enzyme molecules are bound to substrate. 3' to 5' exonuclease activit Postulates the formati Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. Synthesize primers using free NTPs as th 3' to 5' exonuclease activit States that the reactio Bidirectional slope, $KM/VMAX$, y-intercept Enzyme is completely satu Synthesize primers using f: Catalyses the coi Synthesize primers: Catalyses the conver: Synthesize primers 3' to 5' exonuclease activit Postulates the formati Semiconservative slope, $VMAX$, y-intercept, 1 Half the enzyme molecule: Synthesize primers using f: Synthesize primers: Synthesize primers: Synthesize primers 5' to 3' exonuclease activit Postulates the formati Conservative, Semiconsen slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester bond between the 3'-OH of one Okazak Synthesize primers using free NTPs as th 3' to 5' exonuclease activit Postulates the formati Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nucleotides of the RN Unwind the double ht Synthesize primers 3' to 5' exonuclease activit States that the reactio Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. Synthesize primers using free NTPs as the substrate and the 5' to 3' endonuclease activity Conservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Form a phosphor Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit Postulates the formati Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. 3' to 5' endonuclease activ Postulates the formati Semiconservative $VMAX$, slope, $KM/VMAX$, y-intercept, $1/VMAX$ Bidirectional slope, $KM/VMAX$, y-intercept The velocity of the reaction Form a phosphodiester boi Replaces the nu Form a phosphodi: Synthesize primers u: Catalyses the conv 5' to 3' endonuclease activ States that the rate of Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. 3' to 5' exonuclease activity Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept Enzyme is completely saturated with substrate. Catalyses the conversion of an aldose sugar to a ketose sugar 3' to 5' exonuclease activit Postulates the formati Bidirectional slope, $KM/VMAX$, y-intercept, $VMAX$ Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative, Bidirec slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester bond between the 3'-OH of one Okazak Synthesize primers using free NTPs as th 3' to 5' exonuclease activit States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept The velocity of the reaction: Catalyses the conversion c Form a phosphor Replaces the nucl Synthesize primers u: Unwind the double t 5' to 3' exonuclease activit States that the rate of Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the rate of Unidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Bidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit Postulates the formati Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit Postulates the formati Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative pt, $VMAX$ The velocity of the reaction Replaces the nucleotides Replaces the nu Replaces the nucl Unwind the double ht Unwind the double t 5' to 3' exonuclease activit States that the reactio Unidirectional slope, $KM/VMAX$, y-intercept Half the enzyme molecules are bound to substrate. Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit Enables us to calculat Semiconservative slope, $KM/VMAX$, y-intercept, $1/VMAX$ Synthesize primers u: Catalyses the conv 3' to 5' endonuclease activ States that the reactio Semiconservative slope, $KM/VMAX$, y-intercept Half the enzyme molecule: Form a phosphodiester boi Replaces the nu Unwind the double Synthesize primers u: Catalyses the conv 3' to 5' exonuclease activit States that the reactio Semiconservative

PAPER: BIOCHEMISTRY

Sl. No.	UNIV. ROLL NO	Name	CA 1	CA 2	CA 3	CA 4
			25	25	25	25
1	18901919001	ANIRBAN GHOSH	18	23	23	20
2	18901919002	SOHAM DUTTA	18	25	25	22
3	18901919003	DEBAM RAY	18	20	18	16
4	18901919004	SUCHETA KARMAKAR	18	25	23	21
5	18901919005	ANITA KUMBHAKAR	18	25	24	20
6	18901919006	ARNAB PAL	25	20	20	10
7	18901919007	PRODIPTO DAS	18	23	21	22
8	18901919008	NIKITA DUTTA	18	25	25	22
9	18901919009	SWARAJ NAYEK	18	23	25	18
10	18901919010	MEHEDI HASAN	18	20	0	A
11	18901919011	SUDIN NAYEK	18	20	25	19
12	18901919012	DEBABRATA CHATTOPADHYAY	4	20	21	15
13	18901919013	DIPEN RANA	18	25	25	18
14	18901919014	SUMAN MONDAL	18	20	17	A
15	18901919015	DEBARGHYA KARFORMA	18	21	24	17
16	18901919016	ARYADIPTO DASGUPTA	18	24	18	17
17	18901919017	ABHISHIKTA SARKAR	18	24	25	22
18	18901919018	ANKIT DAS	18	24	24	22
19	18901919019	ABDUR RAHAMAN	18	22	23	22
20	18901919020	ANGANA CHAKRABORTY	18	22	24	23
21	18901919021	ABHIJIT GOSWAMI	18	23	24	20
22	18901919022	ARIJIT DEY	18	21	19	14
23	18901919023	APURBA PANDIT	A	A	0	A
24	18901919025	SOUFYADIP SAHA	18	21	24	21
25	18901919026	ANIRBAN DALUI	25	22	24	21
26	18901919027	GOPENDRA KRISHNA ROY	18	23	25	21
27	18901919028	SUBHANKAR NAG	25	20	24	20
28	18901919029	HAREKRISHNA SAHA	25	20	25	22
29	18901919030	SOUFYADEEP MAJHI	25	20	23	21
30	18901919031	SRINJANI MITRA	18	24	23	18
31	18901919032	HIRAK BHOWMIK	25	24	25	17
32	18901919033	RUDRA DAS	18	21	24	18
33	18901919034	ANKITA KARMAKAR	25	25	25	21
34	18901919035	SOUVIK KOWER	25	20	24	19
35	18901919036	AVAS PAL	25	24	24	19
36	18901919037	GOURAB MANNA	25	25	24	23
37	18901919038	ADARSHA GANGULY	25	22	23	15
38	18901919039	AVIJIT RUIDAS	25	24	25	19
39	18901919040	ANIKET DAS	18	22	23	20
40	18901919041	SPURTIKA JANA	25	25	25	21
41	18901919042	DEBANWITA LAHA	18	25	24	23
42	18901919043	SUBHADIP MANNA	25	24	24	18
43	18901919044	DEBAPRIYA DEY	25	21	23	A
44	18901919045	SOUVIK GHOSH	25	23	24	18
45	18901919046	SNEHASISH KONER	18	21	25	20
46	18901919047	DINESH PRADHAN	25	23	25	18
47	18901919048	SK DILSHAD ANWAR	25	20	24	20
48	18901919049	ARNAB DEY	25	24	24	18
49	18901919050	SOURAV PAUL	18	25	25	22

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21/11/20

50	18901919051	SATADRU MALLIK				
51	18901919052	SRABONA KONAR	18	23	25	20
52	18901919053	SUMAN DAS	25	24	25	23
53	18901919054	ARKAPRAVA PAUL	25	22	23	14
54	18901919055	SOVAN GIRI	25	25	25	22
55	18901919056	SUDARSHINI DUTTA	25	24	23	21
56	18901919057	SOURAV GORAI	25	25	23	21
57	18901919058	SWAPNAMROY GAYEN	25	24	25	19
58	18901919059	SURYAKANTA DOLUI	18	25	23	22
59	18901919060	SOURAV PATRA	25	24	25	19
60	18901919061	TAMAN DAS	25	24	23	20
61	18901919062	TAMAN DAS	25	20	0	A
62	18901919063	SOU MEN LAHARI	25	24	24	18
63	18901919064	SWAGATA ROY	25	24	24	22
64	18901919065	SWARUP CHATTERJEE	18	24	24	22
65	18901919066	PRIYANKA PANDIT	A	A	0	A
66	18901919067	SOURAV GHOSH	25	20	12	A
67	18901919068	WASHIM AKTAR	25	25	24	17
68	18901919069	TRIDIB NAYEK	25	25	25	22
69	18901919070	KRISHNENDU BHOWMICK	18	24	24	19
70	18901919071	MD SAHIDUJJAMAN	25	20	16	18
71	18901919072	SAYED ANOWAR	25	23	25	20
72	18901919073	SOMNATH SINGHA	25	25	22	18
73	18901919074	SUMANA PAL	25	25	25	21
74	18901919075	MOHITOSH PATRA	18	23	24	21
75	18901919076	RAJ ALI	25	23	23	14
76	18901919077	SUSOVAN DAS	25	24	24	20
77	18901919078	SARMISTHA MONDAL	18	22	22	20
78	18901919079	SUDIP MONDAL	25	25	24	20
79	18901919080	SUBHANKAR PAL	25	24	24	17
80	18901919081	KOUSHIK DAS	18	23	24	21
81	18901919082	ISHIKA DEY	25	25	25	21
82	18901919083	SUDIP MAJI	18	24	23	18
83	18901919084	RAHUL MALLICK	18	23	24	22
84	18901919085	RITAM PATRA	18	23	15	15
85	18901919086	SAYANTA SINGHA	A	20	15	10
86	18901919087	PRIYANGI GHOSAL	25	25	25	21
87	18901919088	ROHIT CHATTERJEE	25	23	25	22
88	18901919089	JAGADISH SHIL	25	20	24	22
89	18901919090	MANOJ MANA	18	24	23	13
90	18901919091	SAHADEV DAS	25	23	25	20
91	18901919092	JAYITA PAL	25	25	25	17
92	18901919093	SHREYA DATTA	18	23	0	10
93	18901919094	PRIYAM KUMAR GIRI	25	20	25	18
94	18901919095	RAJAT SAMAI	25	20	23	13
95	18901919096	HIRAK DYUTI GANGULY	18	23	22	22
96	18901919097	INDRAJIT PAL	25	23	24	22
97	18901919098	SANGRAM RAKSHIT	25	22	25	19
98	18901919099	RAJAT DANDAPAT	25	22	23	20
99	18901919100	MAINUL HASAN	25	23	20	18
99	18901919101	NIRUPAM PATTANAYAK	25	24	18	13
100	18901919102	MD MAINUL HASSAN	25	24	21	13

Handwritten signature and date
21/11/20


Course Completion Status

Academic Year: 2019-2020

Course Name: Biochemishry (Theory)


Course code: PT-214

Taught by:
 1. Dr. Parthasarathi Panda
 2. Mies Puja Mishra
 3.

Date	Proposed number of units to be covered on date as per lesson plan	Units Completed	% of Completion	Reason for incompletion	Signature of Faculty(s)	Signature of Principal/Director
12.02.2020	2	Unit I & II	40%		Panda 21/11/2020 Mishra 2/11/2020	 PRINCIPAL Dr. B. C. Roy College of Pharmacy & A.H.S. Bidhannagar, Durgapur-713206
08.04.2020	2	Unit III & V	40%		Panda 21/11/2020 Mishra 2/11/2020	
20.05.2020	1	Unit IV	20%		Panda 21/11/2020 Mishra 02/11/2020	

Total = 100%

GRADES	PT215	PT213	PT214	PT216	PT298	PT296	PT297	HU282	PTC203	PTC293
O	82	78	76	91	81	52	69	89	50	0
E	9	16	15	2	8	32	19	2	24	80
A	3	1	4	2	1	8	5	1	9	9
B	2	2	0	1	4	3	2	5	5	4
C	1	0	2	1	3	2	1	0	9	3
D	0	0	0	0	0	0	1	0	0	1
F	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0
TOTAL	97	97	97	97	97	97	97	97	97	97
TOTAL NO. OF STUDENTS GOT C & ABOVE	97	97	97	97	97	97	96	97	97	96
PERCENTN ATTAINMENT	100%	100%	100%	100%	100%	100%	99%	100%	100%	99%
ATTAINMENT	3	3	3	3	3	3	3	3	3	3


 2/11/2020
 (Indon - Salaminh
 BCRCD)

Course Feedback (Summary)

Sub Code PT 213
 Sub Type T

106	107	107	107	108	0	0	0	0	0	0	0	0	0	0	535	97.27	2020-2021
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Sub Code **PT 214**
 Sub Type T

112	112	112	112	113	0	0	0	0	0	0	0	0	0	0	561	97.57	2020-2021
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PRINCIPAL

Dr. B. C. Roy College of Pharmacy & A.H.S.
 Bidhannagar, Durgapur-713206

ACADEMIC YEAR:

2018-19

**DR.B.C.ROY COLLEGE OF PHARMACY AND AHS
DR.MEGHNAD SAHA SARANI,BIDHANNAGAR
DURGAPUR-06**

B.PHARM 1ST YEAR 2ND SEMESTER SECTION (A) & (B) ROUTINE
EFFECTIVE FROM 10TH JANUARY, 2019

RTN/BEVEN 2019/2ND SEM

DAY	SEC	10.00-11.00	11.00-2.00	2.00-2.30	2.30-3.30	3.30-4.30	4.30-5.30	5.30-6.30
TUE	A	PT-216.AC	PTC-293GA PT-296GB PT-297GC PT-298GD LIB_INTGE SB(AS) PM(AB) SK(PSP), SSM(MD)	RECESS	PT-214.PSP	PT-215.SSM	PTC-203.SB	TUTORIAL
	B	PT-215.SSM			PTC-203.SB	PT-216.AC	PT-214.PSP	
WED	A	PT-213.PM	PTC-293GB PT-296GC,PT-297GD.PT-298GE,LIB_INTGA SB(AS), AB(PM), PSP(SK), SNM(SSM)		HU-282.SNM	PT-216.AC	HU-282.JM	TUTORIAL
	B	PT-216.AC			HU-282.JM	PT-213.PM	HU-282.SNM	
THUR	A	PT-215.SSM	PTC-293GC.PT-296GD,PT-297GE.PT-298GA,LIB_INTGB SB(AS), PM(AB), PSP(SK), MD(SSM)		PT-216.DC	PT-214.PSP	PT-213.PM	TUTORIAL
	B	PT-214.PSP			PT-213.PM	PT-215.SSM	PT-216.DC	
FRI	A	PTC-203.SB	PTC-293GD,PT-296GE,PT-297GA,PT-298GB,LIB_INTGC AS(SB), AB(PM), SK(PSP), SSM(SNM)		PT-214.PSP	HU-282.AS	PT-215.SSM	TUTORIAL
	B	HU-282.AS			PT-215.SSM	PTC-203.SB	E-CELL	
SAT	A	PTC-203.SB	PTC-293GE,PT-296GA,PT-297GB,PT-298GC,LIB_INTGD AS(SB), PM(AB), PSP(SK), SSM(MD)		PT-213.PM	LIB/INT	E-CELL	TUTORIAL
	B	PT-213.PM			PTC-203.SB	PT-214.PSP	LIB/INT	

SB-MR.SOUMEN BANNERJEE,SSM-MR.SAROJ SINGHMURA,AB-MR.AALOK BASU,MD-MS.MANAMI DHIBAR,AC-DR.AVIJIT CHATTERJEE,AS-MR.ARINDAM SARKAR
SNM-MS.SANCHAREE MONDAL,PSP-DR.PARTHASARATHI PANDA,PM-MS.PUJA MISHRA,DC-MR.DIPESH CHAKRABORTY.SK-MR.SANJOY KONAR

SL.NO=1
REV.NO=0

PREPARED BY
Dr. S. Bose
MR.S.BOSE
(ASST.PROF,BCRCP)

Workload for PSP = 6h

APPROVED BY
Dr. S. Ray
DR.S.RAY
(PRINCIPAL,BCRCP)
PRINCIPAL
Dr. B. C. Roy College of Pharmacy & A.H.S.
Bidhannagar, Durgapur-713206

LIST OF ASSIGNMENTS

Paper: BIOCHEMISTRY (THEORY)

PT-214

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
1	18901918016	UMME SALMA	Electron Transport Chain	CO.PT 214.2
2	18901918017	TUSHAR KANTI DHARA		
3	18901918018	TUNIR SAHOO		
4	18901918019	TIYAS BARICK		
5	18901918020	TATHAGATA KHANRA		
6	18901918021	TAMAL PAL		
7	18901918023	SWADHIN MANDAL		
8	18901918024	SUVASISH MITRA		
9	18901918025	SUVAJIT HAZRA		
10	18901918026	SURYADEEP BOSE		
11	18901918027	SUMIT MUKHERJEE		
12	18901918028	SUMAN TANTI	Diabetes Mellitus	CO.PT 214.2
13	18901918029	SUMAN PAINE		
14	18901918030	SUMAN MODAK		
15	18901918031	SUMAN GHOSH		
16	18901918032	SUDIPTA HAIT		
17	18901918033	SUBHAM MONDAL		
18	18901918034	SRIJITA CHATTERJEE		
19	18901918035	SOUVIK SINGHA		
20	18901918036	SOUTIK DUTTA		
21	18901918037	SOURAV MONDAL		
22	18901918038	SOURAV MANDAL	Enzyme Inhibitors and their clinical significance	CO.PT 214.4
23	18901918039	SOURAV MAHATA		
24	18901918040	SOUMITRA SAHOO		
25	18901918041	SOUMAJIT BANERJEE		
26	18901918042	SOMEN GORAI		
27	18901918043	SNEHA BHATTACHARJEE		
28	18901918044	SK NAYIM ALI		
29	18901918045	SHUBHASHREE MONDAL		
30	18901918046	SHUBHAM KOLAY		
31	18901918047	SHRUTI DAS		
32	18901918048	SHREYA MAJI		
33	18901918049	SAYANTAN DAS		
34	18901918050	SATYAJIT ROY		
35	18901918051	SANJOY KUMAR BASU		
36	18901918052	SANGRAMJIT ROY		
37	18901918053	SAHEB ADAK		
38	18901918054	RIYA DEY		
39	18901918055	RITAM MONDAL		
40	18901918056	REHAN ALI MONDAL		
41	18901918057	RATNADIP SAIN	Biosynthesis and catabolism of nucleotide and its metabolic disorder	CO.PT 214.2
42	18901918058	RAKESH DEY		
43	18901918059	RAJSHEKHAR GHORAI		
44	18901918060	RAJIB DE		
45	18901918061	RAJESH SK		
46	18901918062	RAJDEEP KARMAKAR		
47	18901918063	RAHUL MAITY		
48	18901918064	RAHUL KARMAKAR		
49	18901918065	PYERIMA MAJI		
50	18901918066	PUSPITA CHAL		
51	18901918067	PRIYAM PAL	Cholesterol and its important role in biological system	CO.PT 214.2
52	18901918068	PRIYA RAY		
53	18901918069	PRIYA BHAGAT		
54	18901918070	PRITIKAR DAS		
55	18901918071	PRATIK BARIK		
56	18901918072	PRAKARSHA DE		
57	18901918073	PRADIP MAI		
58	18901918076	MOUMITA DAS		
59	18901918077	MD SAMIM SARDAR		

Signature
21/07/19

Dr. B. C. Roy College of Pharmacy and Allied Health Sciences
Durgapur - 713206

B. Pharm. 1st Year 2nd Semester (NEW) Theory 2019

LIST OF ASSIGNMENTS

Paper:

BIOCHEMISTRY (THEORY)

PT-214

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
60	18901918078	MD BELAL HOSSAIN	Disorder of Protein metabolism	CO.PT 214.2
61	18901918079	MD ASHRAF ALI		
62	18901918080	KUSHAL SENI		
63	18901918081	KASHMIRI DUTTA		
64	18901918082	KALYANI KUMARI		
65	18901918083	KALPATARU MITRA		
66	18901918084	JISHA BARIK		
67	18901918085	JEET BANERJEE		
68	18901918086	JAYANTA MAHALI		
69	18901918087	IRFAN MALLIK		
70	18901918088	IMZAZUL RAHAMAN	Genetic code and its biological significance	CO.PT 214.3
71	18901918089	HIRONMOY DAS		
72	18901918090	HABIBUR RAHAMAN MOMIN		
73	18901918093	DONA ADAK		
74	18901918094	DIPAN KUNDU		
75	18901918095	DIBYENDU NANDI		
76	18901918096	DIBYENDU MAJI		
77	18901918097	DEBOJYOTI SARKAR		
78	18901918098	DEBARGHYA PRAMANIK		
79	18901918099	DEBAPRIYA KOLEY		
80	18901918100	CHANDAN DAS		
81	18901918101	BISWARUP DUTTA	Adenosine Triphosphate (ATP)	CO.PT 214.2
82	18901918102	BIPLAB DAS		
83	18901918103	BAZRADEEP MONDAL		
84	18901918104	AYAN MAJUMDER		
85	18901918105	AVISHEK SARKAR		
86	18901918106	ASLAM ANSARI		
87	18901918107	ASISH JANA		
88	18901918108	ARUP KOLEY		
89	18901918109	ARUN BAIDYA		
90	18901918110	ARITRA LAHIRI		
91	18901918111	ARITRA CHOWDHURY	Jaundice	CO.PT 214.2
92	18901918112	ANUSKA CHATTERJEE		
93	18901918113	ANKIT CHATTERJEE		
94	18901918114	ANIRBAN DAS		
95	18901918115	ANIRBAN BANERJEE		
96	18901918116	AKASH SAHA		
97	18901918117	AKASH MONDAL		
98	18901918118	AISHIKA BARMAN		
99	18901918119	ADWITIYA ROY		
100	18901918120	ABHISHEK GHOSH		
101	18901918075	NADIM MONDAL	Therapeutic and diagnostic applications of enzymes	CO.PT 214.1
102	18901918091	GOPAL SARKAR		
103	18901918074	PARTHA PRATIM BEZ		
104	18901918092	DORA SAMANTA		
105	18901917048	SOUMITA GHARA		

Signature
21/09/15

GROUP – A [Multiple Choice Type Questions]

Choose the correct alternatives for all of the following:

5 × 1 = 5

- Which of the following statements best describes lactose?
 - It is monosaccharide and reducing sugar.
 - It is disaccharide and reducing sugar.
 - It is disaccharide and non-reducing sugar.
 - It consists of D-glucose and D-fructose units.
- DNA, RNA and ATP are all composed of
 - nucleotides
 - purines
 - pentose sugar
 - pyrimidines
- ATP synthesis is carried out by the mitochondrial enzyme complex
 - I
 - III
 - IV
 - V
- Which of the following statement is true for von Gierke's disease (Type I glycogenosis)
 - It is one type of glycogen storage disease.
 - It occurs due to the defect in the enzyme glucose 6-phosphatase.
 - It is characterized by fasting hypoglycaemia, lactic acidemia, hyperlipidemia, ketosis, etc.
 - All of the above
- Deficiency of Glucose 6-phosphate dehydrogenase leads to
 - Haemolytic anaemia
 - Pernicious anaemia
 - Aplastic anaemia
 - None of the above

GROUP – B [Short Answer Type: Answer any two]

2 × 2.5 = 5

- Explain high energy compounds with examples [2.5]
- Write down the energetics of glycolysis cycle. Classify diabetes mellitus. [2.5]
- Differentiate between the Pasteur effect and Crabtree effect. [2.5]

GROUP – C

Answer any one of the following

1 × 10 = 10

- What is Gibb's free energy? Deduce the relationship between free energy and equilibrium constant of a biochemical reaction system.
- Write a note on inhibitors of Electron Transport Chain. [5 + 5 = 10]
- Define the following term:
 - Glycolysis, ii) Gluconeogenesis, iii) Glycogenesis, iv) Glycogenolysis, and v) Hexose Monophosphate Shunt
- Show the Krebs cycle pathway schematically. [5 + 5]

Handwritten signature and date:
S. Panda
09/03/19

Mapping between the QPs of 1st Sessional Examination 2019 of PT-214 and Course Outcomes (CO)

Question No	CO.PT 214.1	CO.PT 214.2	CO.PT 214.3	CO.PT 214.4
1	1			
2	1			
3		1		
4		1		
5		1		
6		2.5		
7		2.5		
8		2.5		
9		10		
10		10		
Total	2	30.5		

S. Laxmi
09/08/19

GROUP – A [Multiple Choice Type Questions]

Choose the correct alternatives for all of the following:

5 x 1 = 5

1. An enzyme that catalyses the conversion of an aldose sugar to a ketose sugar would be classified as one of the:

- a) Transferases
b) Isomerases
c) Oxidoreductases
d) Hydrolases

2. When (S) is equal to K_m , which of the following conditions exist?

- a) Half the enzyme molecules are bound to substrate
b) The velocity of the reaction is equal to V_{max}
c) The velocity of the reaction is independent of substrate concentration
d) Enzyme is completely saturated with substrate

3. All of the following are sulfur containing amino acids found in proteins except:

- a) Cysteine
b) Threonine
c) Cystine
d) Methionine

4. The two nitrogen atoms in urea arise from:

- a) Ammonia and glutamine
b) Glutamine and aspartic acid
c) Glutamine and glutamic acid
d) Ammonia and aspartic acid

5. Which of the following enzyme catalyses reactions in the biosynthesis of both catecholamines and 5-OH tryptamine (serotonin)?

- a) Tryptophan hydroxylase
b) Dopamine- β -hydroxylase
c) Aromatic amino acid decarboxylase
d) Phenyl ethanolamine N-methyl transferase

GROUP – B [Short Answer Type: Answer any two]

2 x 2.5 = 5

6. Mention the various factors affecting the enzyme activity. [2.5]

7. Distinguish between the competitive and non-competitive inhibitions [2.5]

8. Define protein and classify it with proper example. [2.5]

GROUP – C

Answer any one of the following

1 x 10 = 10

9. a) What do you mean by E.C. number of an enzyme?

b) Derive Michaelis Menten equation and describe enzyme kinetics briefly with proper plots.

c) Briefly discuss about the enzyme and isoenzyme used in clinical diagnosis. [2 + 6 + 2 = 10]

10. a) Illustrate biosynthesis and significance of adrenaline.

b) What do you mean by protein denaturation? Explain it with example. [5 + 5]

Aswade
23/09/17

Mapping between the QPs of 2nd Sessional Examination 2019 of PT-214 and Course Outcomes (CO)

Question No	CO.PT 214.1	CO.PT 214.2	CO.PT 214.3	CO.PT 214.4
1				1
2				1
3	1			
4		1		
5		1		
6				2.5
7				2.5
8	2.5			
9				10
10		10		
Total	3.5	12		17

Asana
23/04/19

**C c xDR. B. C. ROY COLLEGE OF PHARMACY AND ALLIED HEALTH
SCIENCES, DURGAPUR – 713206
B. PHARM. 1ST YEAR 2ND SEMESTER 2019**

QUIZ QUESTIONS

PAPER- BIOCHEMISTRY (THEORY)

PAPER CODE- PT-214

1. The glycosidic bonds in DNA and RNA

a) connect the sugar to the base.

b) stabilize Watson-Crick H-bonds.

Answer: a

2) Which of the following vitamins of not a component of electron transport chain?

a) Nicotinamide

b) Ubiquinone

c) Biotin

d) Riboflavin

Answer: c

3 All of the following compounds are intermediates of TCA cycle except:

a) Malate

b) Pyruvate

c) Oxaloacetate

d) Fumarate

Answer: b

4. High Km enzyme:

a) has high affinity to its substrate.

b) has low affinity to its substrate.

Answer: b

5. Prosthetic group is:

a) firmly attached to enzyme.

b) loosely attached to the enzyme.

Answer: a

6. The catalytic activity of an enzyme is restricted to its small portion called

a) Active site.

b) Allosteric site.

Answer: a

7. An activated enzyme made of polypeptide chain and a co-factor is

a) Apoenzyme

b) Holoenzyme

Answer: b

8. D & L enantiomer of glucose is determined by

a) C4

b) C5

Answer: b

9. Inulin is a homopolysaccharide of

a) Fructose

b) Glucose

Answer: a

10. An example of non-reducing disaccharide

a) Sucrose

b) Lactose

Answer: a

Aswade
11/05/19

Mapping between the Quiz Questions and course outcomes (CO)

Question No	CO.PT 214.1	CO.PT 214.2	CO.PT 214.3	CO.PT 214.4
1			1	
2		1		
3		1		
4				1
5				1
6				1
7				1
8	1			
9	1			
10	1			
Total	3	2	1	4

Blawja
11/08/19



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : PT-214 (N)

BIO-CHEMISTRY

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

i) Activation of fatty acid occurs in the

a) Cytosol

b) Mitochondria

c) Stomach

d) Membrane.

ii) Cytochrome C-oxidase is inhibited by

a) Succinate

b) Pyruvate

c) Malate

d) Cyanide.

iii) α -helix is stabilized by

a) hydrogen bonding

b) salt bond

c) disulphide bond

d) non-polar bond.

- iv) In Gluconeogenesis process which is the major substrate ?
a) Amino acid b) Glycogen
c) Sucrose d) Maltose.
- v) Epimer of α -D-glucose is
a) α -D-galactose b) α -D-Mannose
c) both (a) and (b) d) none of these.
- vi) Enzymes that catalyze transfer of moieties are
a) Lyase b) Oxidoreductase
c) Transferase d) Ligase.
- vii) Dipeptide contains how many amino acids ?
a) Three b) Two
c) Four d) None of these.
- viii) Amino acids required in the biosynthesis of purine bases are
a) glycine and glutamate
b) glycine, glutamate, aspartate
c) glycine, glutamine and aspartate
d) glutamine and aspartate.
- ix) Lipase is a class of enzyme
a) Oxidoreductase b) Hydrolase
c) Transferase d) Lyase.
- x) 5-fluorouracil, a potent anti-cancer drug hinders the nucleotide synthesis by inhibiting the enzyme thymidylate synthase through converting into fluorodeoxyuridylate. This phenomenon is an example of
a) Allosteric inhibition
b) Reversible inhibition
c) Feedback inhibition
d) Suicide inhibition.
- xi) Which of the following vitamins is not a component of electron transport chain ?
a) Nicotinamide b) Ubiquinone
c) Biotin d) Riboflavin.
- xii) Biliverdin reductase reduces the methenyl bridge between Pyrrole III and Pyrrole IV of biliverdin to a methylene group to produce
a) Bilirubin b) Urobilin
c) Stercobilin d) None of these.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Define carbohydrates and classify them with proper example. CO M 2111
3. What is genetic code ? What are start condons and stop condons ? Is there a universal start condon ? If yes, name and state the function of it. CO M 2111
4. Write the pathway of catabolism of phenylalanine. CO M 2111
5. Define apoenzyme, holoenzyme, coenzyme, isoenzyme and lysozyme with examples. CO M 2111
6. What is the role of allopurinol in management of gouty arthritis ? What is the full form of PRPP ? What is the first produced purine nucleotide base ? Write down the structure of the end product of purine metabolism. CO M 2111

$2 + 1 + 1 + 1$

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is Gibbs' free energy concept ? Explain how Gibbs' free energy is correlated with the enthalpy and entropy of a reaction system.
- b) Deduce the relationship between free energy change and equilibrium constant of a biochemical reaction system at equilibrium.
- c) Write down about high energy compounds.
- d) Distinguish between anomer and epimer. CO M 2111

$3 + 3 + 5 + 4$

8. a) Derive Michaelis-Menten equation for ES-complex formation. COPI 2112
- b) Write the biological significance of cholesterol. COPI 2112
- c) Write a note on inhibitors of electron transport chain, (ETC). COPI 2112 7 + 3 + 5
9. a) Define amino acid and protein with examples. Classify protein.
- b) What do you mean by protein denaturation ? Explain it with example. COPI 2112
- c) Write down about jaundice. COPI 2112 5 + 5 + 5
10. a) What are gene and genome ?
- b) Why is DNA replication called as semiconservative process ? Discuss about different types of enzymes involved in DNA replication.
- c) Write down about the inhibitors of protein synthesis. COPI 2112 2 + 7 + 6
11. Differentiate between saturated, mono-unsaturated and poly-unsaturated fatty acids. What are omega 6 and omega 3 fatty acids ? Which are beneficial to us and why ? Write down the chain elongation process of even number of carbon containing fatty acids. What are triglycerides ? What is the result of hydrogenation of triglycerides ? Write in brief about the β -oxidation of fatty acids. 3 + 2 + 1 + 2 + 2 + 5
-
- COPI 2112

Quiz Assessment Rubrics

Academic Year: 2018-19

Subject Code: PT-214

No. of Student Present: 95

Question Number	CO	% Correct	% Incorrect	Total
Q1	CO.PT 214.1 & 214.3	94.7	5.3	100
Q2	CO.PT 214.2	93.6	6.4	100
Q3	CO.PT 214.2	87.2	12.8	100
Q4	CO.PT 214.1	62.8	37.2	100
Q5	CO.PT 214.4	68.1	31.9	100
Q6	CO.PT 214.4	86.2	13.8	100
Q7	CO.PT 214.4	66	34	100
Q8	CO.PT 214.1	79.8	20.2	100
Q9	CO.PT 214.1	85.1	14.9	100
Q10	CO.PT 214.1	91.5	8.5	100
Average		81.5	18.5	Attainment
				3

Attainment Level	Score
$60\% \leq X < 70\%$	1
$70\% \leq X < 80\%$	2
$80\% \leq X \leq 100\%$	3

S. Panik
11/05/19

B. Pharm. 1st Year 2nd Semester (NEW) Backlog Theory Examination' 2019

Tabulation Sheet

Paper: BIOCHEMISTRY

Code: PT 214

Sl. No.	University Roll No.	Name	1st Sess (20)	1st Sess (50)	2nd Sess (20)	2nd Sess (50)	3rd sess (20)	3rd sess (50)	Best of Three (50)	Assign. (40)	Quiz (10)	Total (100)	Attn. (5)
1	18901916045	SK NADIM ALI	14	35		0		0	35	35	7	77	4
2	18901917018	TANMOY DAN	14	35		0		0	35	35	7	77	4
3	18901917041	SOURAV SAHOO	17	42.5		0		0	43	37	8	88	4
4	18901917050	SOMDEV MONDAL	14	35		0		0	35	35	7	77	4
5	18901917062	SAYAN KUNDU	17	42.5		0		0	43	36	8	87	4
6	18901917063	SAYAN DALUI		0		0		0	0	0	0	0	4
7	18901917074	RAJAT BISWAS	15	37.5		0		0	38	35	7	80	4
8	18901917082	PRASUN KUMAR DUTTA	16	40		0		0	40	36	8	84	4
9	18901917090	MAHMUD UL HASSAN	14	35		0		0	35	35	8	78	4
10	18901917096	INDRANIL GHOSAL	16	40		0		0	40	37	8	85	4
11	18901917109	BISHAL GOSWAMI	14	35		0		0	35	35	8	78	4
12	18901917115	ATANU RUIDAS	17	42.5		0		0	43	36	7	86	4
13	18901917116	ARMAN NIZAMI	15	37.5		0		0	38	35	7	80	4
14	18901917118	ARIJIT GHOSH	16	40		0		0	40	36	8	84	4
15	18901917119	ARIJEET MONDAL	16	40		0		0	40	37	8	85	4
16	18901917126	ANIK LAYEK	17	42.5		0		0	43	37	8	88	4

f. Panik
 Signature of the Examiner(s) with date
 08/06/19

B. Pharm. 1st Year 2nd Semester (NEW) Theory Examination' 2019

Tabulation Sheet

Paper: BIOCHEMISTRY (THEORY)

Code: PT-21A

Sl. No.	University Roll No.	Name	1st Sess (20)	1st Sess (50)	2nd Sess (20)	2nd Sess (50)	3rd sess (20)	3rd sess (50)	Best of Three (50)	Assign (40)	Quiz (10)	Total (100)	Attrn (5)
1	18901917048	SOUMITA GHARA		0		0	12	30	30	35	7	72	4
2	18901918016	UMME SALMA	10	25			0	0	25	37	8	70	4
3	18901918017	TUSHAR KANTI DHARA	19	47.5	15	37.5		0	48	39	8	95	4
4	18901918018	TUNIR SAHOO	13	32.5		0		0	33	37	7	77	4
5	18901918019	TIYAS BARICK	18	45		0		0	45	39	8	92	4
6	18901918020	TATHAGATA KHANRA	12	30	9	22.5		0	30	39	9	78	4
7	18901918021	TAMAL PAL	10	25	4	10		0	25	39	9	73	4
8	18901918023	SWADHIN MANDAL	9	22.5		0		0	23	38	7	68	4
9	18901918024	SUVASISH MITRA	18	45	17	42.5		0	45	39	10	94	4
10	18901918025	SUVAJIT HAZRA	10	25		0		0	25	39	9	73	4
11	18901918026	SURYADEEP BOSE	0	0	12	30		0	30	35	5	70	4
12	18901918027	SUMIT MUKHERJEE	5	12.5	10	25		0	25	39	9	73	4
13	18901918028	SUMAN TANTI	9	22.5	3	7.5		0	23	38	7	68	4
14	18901918029	SUMAN PAINE	11	27.5	4	10		0	28	38	6	72	4
15	18901918030	SUMAN MODAK	13	32.5	15	37.5		0	38	39	9	86	5
16	18901918031	SUMAN GHOSH	13	32.5		0		0	33	39	8	80	4
17	18901918032	SUDIPTA HAIT	10	25		0		0	25	38	8	71	4
18	18901918033	SUBHAM MONDAL	17	42.5		0		0	43	39	8	90	4
19	18901918034	SRIJITA CHATTERJEE	11	27.5	8	20		0	28	39	9	76	4
20	18901918035	SOUVIK SINGHA	15	37.5		0		0	38	39	8	85	4
21	18901918036	SOUTIK DUTTA	10	25		0		0	25	36	6	67	4
22	18901918037	SOURAV MONDAL	6	15	10	25		0	25	36	7	68	4
23	18901918038	SOURAV MANDAL	9	22.5		0		0	23	36	6	65	4
24	18901918039	SOURAV MAHATA	7	17.5	11	27.5		0	28	38	8	74	4
25	18901918040	SOUMITRA SAHOO	16	40	13	32.5		0	40	37	8	85	4
26	18901918041	SOUMAJIT BANERJEE	14	35		0		0	35	38	7	80	4
27	18901918042	SOMEN GORAI	12	30	6	15		0	30	37	7	74	4
28	18901918043	SNEHA BHATTACHARJEE	16	40	11	27.5		0	40	38	8	86	4
29	18901918044	SK NAYIM ALI	19	47.5		0		0	48	38	8	94	4
30	18901918045	SHUBHASHREE MONDAL	16	40		0		0	40	38	7	85	4
31	18901918046	SHUBHAM KOLAY	12	30		0		0	30	36	6	72	4
32	18901918047	SHRUTI DAS	11	27.5	16	40		0	40	39	10	89	4
33	18901918048	SHREYA MAJI	9	22.5	11	27.5		0	28	39	10	77	4
34	18901918049	SAYANTAN DAS	7	17.5		6		0	18	38	7	63	4
35	18901918050	SATYAJIT ROY	4	10		7		0	10	35	6	51	4
36	18901918051	SANJOY KUMAR BASU	10	25		0		0	25	35	6	66	4
37	18901918052	SANGRAMJIT ROY	0	0	7	17.5		0	18	35	6	59	4
38	18901918053	SAHEB ADAK	8	20	10	25		0	25	38	8	71	4
39	18901918054	RIYA DEY	13	32.5		0		0	33	37	7	77	4
40	18901918055	RITAM MONDAL	10	25		0		0	25	38	8	71	4
41	18901918056	REHAN ALI MONDAL	10	25	6	15		0	25	38	7	70	4
42	18901918057	RATNADIP SAIN	17	42.5	15	37.5		0	43	39	8	90	5
43	18901918058	RAKESH DEY	14	35		0		0	35	36	5	76	4
44	18901918059	RAJSHEKHAR GHORAI	10	25		0		0	25	38	7	70	4
45	18901918060	RAJIB DE	9	22.5	15	37.5		0	38	39	8	85	4
46	18901918061	RAJESH SK	0	0		0	12	30	30	36	9	75	4
47	18901918062	RAJDEEP KARMAKAR	15	37.5	12	30		0	38	37	9	84	4
48	18901918063	RAHUL MAITY	15	37.5	16	40		0	40	38	8	86	4
49	18901918064	RAHUL KARMAKAR	2	5	6	15		0	15	38	7	60	4
50	18901918065	PYERORIMA MAJI	12	30		0		0	30	39	10	79	4
51	18901918066	PUSPITA CHAL	7	17.5	19	47.5		0	48	39	10	97	4
52	18901918067	PRIYAM PAL	10	25		0		0	25	38	7	70	4

Signature of the Examiner(s) with date

Signature of the Examiner(s) with date

B. Pharm. 1st Year 2nd Semester (NEW) Theory Examination' 2019

Tabulation Sheet

Paper: BIOCHEMISTRY (THEORY)

Code: PT-214

Sl. No.	University Roll No.	Name	1st Sess (20)	1st Sess (50)	2nd Sess (20)	2nd Sess (50)	3rd sess(20)	3rd sess (50)	Best of Three (50)	Assign . (40)	Quiz (10)	Total (100)	Attn. (5)
53	18901918068	PRIYA RAY	18	45		0		0	45	38	8	91	4
54	18901918069	PRIYA BHAGAT	10	25	16	40		0	40	39	10	89	4
55	18901918070	PRITIKAR DAS	8	20		0		0	20	38	8	66	4
56	18901918071	PRATIK BARIK	11	27.5	18	45		0	45	39	9	93	5
57	18901918072	PRAKARSHA DE	17	42.5		0		0	43	39	8	90	4
58	18901918073	PRADIP MAL	10	25		0		0	25	38	9	72	4
59	18901918074	PARTHA PRATIM BEZ	12	30		0		0	30	36	8	74	4
60	18901918075	NADIM MONDAL		0	5	12.5		0	13	36	6	55	4
61	18901918076	MOUMITA DAS	16	40	18	45		0	45	39	8	92	4
62	18901918077	MD SAMIM SARDAR	17	42.5	17	42.5		0	43	38	8	89	4
63	18901918078	MD BELAL HOSSAIN	11	27.5		4		0	28	36	7	71	4
64	18901918079	MD ASHRAF ALI	9	22.5	18	45		0	45	38	8	91	5
65	18901918080	KUSHAL SENI	8	20	16	40		0	40	38	9	87	5
66	18901918081	KASHMIRI DUTTA	13	32.5		0		0	33	37	8	78	4
67	18901918082	KALYANI KUMARI	7	17.5	13	32.5		0	33	37	8	78	4
68	18901918083	KALPATARU MITRA	18	45		0		0	45	37	8	90	4
69	18901918084	JISHA BARIK	12	30	3	7.5		0	30	39	6	75	4
70	18901918085	JEET BANERJEE	12	30	15	37.5		0	38	39	8	85	4
71	18901918086	JAYANTA MAHALI	10	25	2	5		0	25	38	7	70	4
72	18901918087	IRFAN MALLIK	0	0	2	5	11	27.5	28	37	9	74	4
73	18901918088	IMZAZUL RAHAMAN	15	37.5	12	30		0	38	39	9	86	4
74	18901918089	HIRONMOY DAS	12	30	3	7.5		0	30	37	7	74	4
75	18901918090	HABIBUR RAHAMAN MOMIN	8	20	7	17.5		0	20	36	7	63	4
76	18901918091	GOPAL SARKAR	7	17.5	6	15	11	27.5	28	36	9	73	4
77	18901918092	DORA SAMANTA	9	22.5	10	25		0	25	37	8	70	4
78	18901918093	DONA ADAK	18	45	15	37.5		0	45	39	9	93	4
79	18901918094	DIPAN KUNDU	0	0	2	5	12	30	30	35	6	71	4
80	18901918095	DIBYENDU NANDI	12	30	10	25		0	30	37	8	75	4
81	18901918096	DIBYENDU MAJI	16	40	14	35		0	40	39	9	88	4
82	18901918097	DEBOJYOTI SARKAR	0	0	3	7.5	13	32.5	33	35	7	75	4
83	18901918098	DEBARGHYA PRAMANIK	13	32.5		0		0	33	36	7	76	4
84	18901918099	DEBAPRIYA KOLEY	14	35		0		0	35	36	7	78	4
85	18901918100	CHANDAN DAS	0	0	6	15	12	30	30	34	6	70	4
86	18901918101	BISWARUP DUTTA	12	30	4	10		0	30	37	7	74	5
87	18901918102	BIPLAB DAS	0	0	11	27.5		0	28	36	7	71	4
88	18901918103	BAZRADEEP MONDAL	11	27.5	7	17.5		0	28	36	7	71	4
89	18901918104	AYAN MAJUMDER	12	30		0		0	30	38	7	75	4
90	18901918105	AVISHEK SARKAR	11	27.5		0		0	28	36	7	71	4
91	18901918106	ASLAM ANSARI	10	25	7	17.5		0	25	37	8	70	4
92	18901918107	ASISH JANA	9	22.5		0		0	23	38	8	69	4
93	18901918108	ARUP KOLEY	9	22.5	13	32.5		0	33	38	8	79	4
94	18901918109	ARUN BAIDYA	7	17.5	4	10	12	30	30	35	6	71	4
95	18901918110	ARITRA LAHIRI	16	40	17	42.5		0	43	39	9	91	5
96	18901918111	ARITRA CHOWDHURY	9	22.5		0		0	23	37	8	68	4
97	18901918112	ANUSKA CHATTERJEE	18	45	19	47.5		0	48	39	9	96	5
98	18901918113	ANKIT CHATTERJEE	0	0		0	13	32.5	33	33	6	72	4
99	18901918114	ANIRBAN DAS	17	42.5	14	35		0	43	38	8	89	5
100	18901918115	ANIRBAN BANERJEE	0	0	16	40		0	40	38	10	88	4
101	18901918116	AKASH SAHA	13	32.5	14	35		0	35	38	9	82	4
102	18901918117	AKASH MONDAL	13	32.5	14	35		0	35	37	7	79	4
103	18901918118	AISHIKA BARMAN	17	42.5		0		0	43	39	10	92	5
104	18901918119	ADWITIYA ROY	6	15		0	12	30	30	37	7	74	4
105	18901918120	ABHISHEK GHOSH	10	25	15	37.5		0	38	39	8	85	4

P. Panda 08/10/19
Signature of the Examiner(s) with date

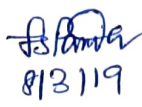

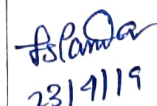



Course Completion Status

Academic Year: 2018-19

Course Name: Biochemistry (Theory)

Course code: PT 214

Taught by:
 1. Dr. Parthasarathi Panda
 2.
 3.

Date	Proposed number of units to be covered on date as per lesson plan	Units Completed	% of Completion	Reason for incompletion	Signature of Faculty(s)	Signature of Principal/Director
08.03.19	2	Unit I & Unit II	40%		 8/3/19	 PRINCIPAL Dr. B. C. Roy College of Pharmacy & A.H.S. Bidhannagar, Durgapur-713206
23.04.19	2	Unit III & Unit V	40%		 23/4/19	 PRINCIPAL Dr. B. C. Roy College of Pharmacy & A.H.S. Bidhannagar, Durgapur-713206
10.05.19	1	Unit IV	20%		 10/5/19	 PRINCIPAL Dr. B. C. Roy College of Pharmacy & A.H.S. Bidhannagar, Durgapur-713206

Course Feedback (Summary)

Sub Code **PT 214**
 Sub Type T

Cours	Cours	Textb	Sessi	Havin	Cours	Cours	Lab	In Viva	Havin	Cours	Grade	Score				
Obj e	books	onal	g Co	e Obj e	struct	voce	g Co	e Obj e	struct	voce	g Co	e Obj e				
ective	Pace	And	Quest	mplet	ective	Pace	ions/	Reflec	mplet	ective	Pace	ions/				
s Acc	Were	Other	ion	Paed	s Acc	Were	Hand	ted	Imed	s Acc	Were	Hand				
uratel	Appro	Instru	pers,	The	uratel	Appro	outs	porta	The	uratel	Appro	outs				
y Des	prate	ctiona	Assig	ourse,	y Des	prate	Were	nt	Co	ourse,	y Des	prate				
cribed	(theo	r) Mate	mentl	l Feel	cribed	(prac	t) Appro	urse	l Feel	cribed	(theo	r) Mate				
(theo	y)	rial	s And	Knowl	(prac	t) Appro	urse	l Feel	cribed	(theo	y)	rial				
ry)	Were	Quizz	edgeat	ical)	(prac	t) Appro	urse	l Feel	cribed	(theo	y)	rial				
	Effect	es Ref	ble In													
	ively	lecte	The	S												
	Used	Impo	bject													
	(theo	riant	(theo													
	y)	Cours	ry)													
	e Asp															
	ect (th															
	eo															
	ory)															
41	37	41	41	33	0	0	0	0	0	0	0	0	0	0	193	64.33

Sub Code PT 215
 Sub Type T

Cours	Cours	Textb	Sessi	Havin	Cours	Cours	Lab	In Viva	Havin	Cours	Grade	Score				
Obj e	books	onal	g Co	e Obj e	struct	voce	g Co	e Obj e	struct	voce	g Co	e Obj e				
ective	Pace	And	Quest	mplet	ective	Pace	ions/	Reflec	mplet	ective	Pace	ions/				
s Acc	Were	Other	ion	Paed	s Acc	Were	Hand	ted	Imed	s Acc	Were	Hand				
uratel	Appro	Instru	pers,	The	uratel	Appro	outs	porta	The	uratel	Appro	outs				
y Des	prate	ctiona	Assig	ourse,	y Des	prate	Were	nt	Co	ourse,	y Des	prate				
cribed	(theo	r) Mate	mentl	l Feel	cribed	(prac	t) Appro	urse	l Feel	cribed	(theo	r) Mate				
(theo	y)	rial	s And	Knowl	(prac	t) Appro	urse	l Feel	cribed	(theo	y)	rial				
ry)	Were	Quizz	edgeat	ical)	(prac	t) Appro	urse	l Feel	cribed	(theo	y)	rial				
	Effect	es Ref	ble In													
	ively	lecte	The	S												
	Used	Impo	bject													
	(theo	riant	(theo													
	y)	Cours	ry)													
	e Asp															
	ect (th															
	eo															
	ory)															
62	58	60	61	59	0	0	0	0	0	0	0	0	0	0	300	92.31

[Handwritten Signature]
 28/06/19

PRINCIPAL
 Dr. B. C. Roy College of Pharmacy & H.S.
 Bidhannagar, Durgapur-713206

ACADEMIC YEAR:

2017-18

**DR.B.C.ROY COLLEGE OF PHARMACY AND AHS
DR.MEGHNAD SAHA SARANI,BIDHANNAGAR
DURGAPUR-06**

**B.PHARM 1ST YEAR 2ND SEMESTER SECTION (A) & (B) ROUTINE
EFFECTIVE FROM 10TH JANUARY, 2018**

DAY	SEC	10.00-11.00	11.00-2.00	2.00-2.30	2.30-3.30	3.30-4.30	4.30-5.30	5.30-6.30	
TUE	A	PT216,DC	PTC293GA,PT296GB,PT297GC,PT298GD,LIB_INTGE	RECESS	HU282,SC	PT215,SSM	PTC203,SB	T-PT213,SKM	
	B	PT215,SSM	SB, AD, PM, GKB		PTC203,SB	PT216,DC	HU282,SC	T-PT214,PM	
WED	A	PT216,DC	PTC293GB,PT296GC,PT297GD,PT298GE,LIB_INTGA		PT213,SKM	PTC203,SB	PT215,SSM	T-PT215,SSM	T-PT214,PM
	B	PTC203,SB	SB SKM, PM, GKB		T-PT215,SSM	PT216,DC	PT213,SKM	PT213,SKM	T-HU282,MC
THUR	A	PT214,PM	PTC293GC,PT296GD,PT297GE,PT298GA,LIB_INTGB		PTC203,SB	PT213,SKM	HU282,MC	HU282,MC	TUTORIAL
	B	PT213,SKM	SB, SKM, PM, SSM		HU282,MC	PT214,PM	PTC203,SB	PTC203,SB	T-PT213,SKM
FRI	A	PT215,SSM	PTC293GD,PT296GE,PT297GA,PT298GB,LIB_INTGC		PT214,PM	PT216,DC	PT213,SKM	PT213,SKM	T-HU282,MC
	B	PT216,DC	SB, AD, PSP, SSM		PT213,SKM	PT215,SSM	PT214,PM	PT214,PM	T-PTC203,SB
SAT	A	T-PT216,DC	PTC293GE,PT296GA,PT297GB,PT298GC,LIB_INTGD		PT215,SSM	PT214,PM	HU282,MC	HU282,MC	T-PTC203,SB
	B	PT214,PM	SB, SKM, PSP, SSM		HU282,MC	T-PT216,DC	PT215,SSM	PT215,SSM	TUTORIAL

DOC.NO:RTN/B/2018/2/EVEN

DC-MR.DIPESH CHAKRABORTY, SSM-MR.SAROJ SINGHAMURA, SB-MR.SOUMEN BANNERJEE, PM-MS.PUJA MISHRA, SKM-DR.SUDIP KR.MONDAL,AD-DR.ANJAN DE.

PSP-DR.PARTHA SARATHI PANDA, GKB-DR.GOUTAM KR.BAGCHISC-DR.SUBRATA CHAKRABORTY, MC-MRS.MOITREYEE CHATTOPADHYAY

ISSUE NO:1

REVISION NO:0

PREPARED BY
MR.S.BOSE
(ASST.PROF,BCRCP)

Work load for PM = 8h

APPROVED BY
DR.S.RAY
(PRINCIPAL,BCRCP)

PRINCIPAL
Dr. B. C. Roy College of Pharmacy & A.H.S.
Bidhannagar, Durgapur-713206

Dr. B .C. ROY COLLEGE OF PHARMACY & A.H.S
DR. MEGHANAD SAHA SARANI, BIDHANNAGAR,
DURGAPUR-06

B. PHARM. 1ST YEAR 2ND SEMESTER 2018

PAPER- BIOCHEMISTRY (THEORY)

PAPER CODE-PT-214

LIST OF ASSIGNMENTS

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
1	18901916045	SK NADIM ALI	Define the following term: i) Glycolysis, ii) Gluconeogenesis, iii) Glycogenesis, iv) Glycogenolysis, and v) Lipolysis vi) HMP shunt, vii) Krebs Cycle	CO.PT 214.2
2	18901917012	ZINATAMAN SARKAR		
3	18901917013	WASHIM RAHAMAN		
4	18901917014	VIVEKANANDA BARIK		
5	18901917015	TUHIN PAUL		
6	18901917016	TUFAN MONDAL		
7	18901917017	TANUJ GHOSH DASTIDAR		
8	18901917018	TANMOY DAN		
9	18901917019	TANIA BISWAS		
10	18901917020	SWAGATA PAL		
11	18901917021	SUVENDU MAITY		
12	18901917022	SUSHOVAN PAL		
13	18901917023	SUSANTA ATA		
14	18901917024	SUPRITI TALIT		
15	18901917025	SUPRABHAT BAJAR		
16	18901917026	SUJOY THAKUR		
17	18901917027	SUJAN MONDAL		
18	18901917028	SUDIPTO CHAKRABORTY		
19	18901917029	SUDIPTA MANDAL		
20	18901917030	SUDIPTA MAITY		
21	18901917031	SUDIP MONDAL		
22	18901917032	SUBHENDU GHOSH		
23	18901917033	SUBHAM KONER		
24	18901917034	SUBHAM DAS		
25	18901917035	SUBHAJYOTI SAMANTA		
26	18901917036	SUBHADIP DAS		
27	18901917037	SOUVIK HATI		
28	18901917038	SOUVIK DANDAPAT		
29	18901917039	SOUVIK BHANDARY		
30	18901917040	SOURIK MONDAL		
31	18901917041	SOURAV SAHU		
32	18901917042	SOURAV ROY		
33	18901917043	SOURAV MUKHERJEE		
34	18901917044	SOUMYAJIT CHAKRABORTY		
35	18901917045	SOUMYADIP MAITY		
36	18901917046	SOUMYA GHOSH		
37	18901917047	SOUMYA DASMAHAPATRA		
38	18901917048	SOUMITA GHARA		
39	18901917049	SOUDEEP DEY		
40	18901917050	SOMEDEV MONDAL		
41	18901917051	SNIGDHA CHAKRABORTY		
42	18901917053	SK MEHERONNISHA		
43	18901917054	SK IZAZ AHAMMED		

Prisha
20/2/18

S. S. Saha
20/2/18

B. PHARM. 1ST YEAR 2ND SEMESTER 2018

PAPER- BIOCHEMISTRY (THEORY)

PAPER CODE- **PT-211**

LIST OF ASSIGNMENTS

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
44	18901917055	SINCHONI CHOUDHURY	Why is TCA cycle considered as an open cycle? Schematically represent Krebs cycle.	CO.PT 214.2
45	18901917056	SHUVECHHA DAS		
46	18901917057	SHREEMA BAKSI		
47	18901917058	SHRABANI SAMANTA		
48	18901917059	SHIBAM DEY		
49	18901917060	SHANTANU META		
50	18901917061	SAYANTAN MAHAPATRA		
51	18901917062	SAYAN KUNDU		
52	18901917063	SAYAN DOLUI		
53	18901917064	SAUROV DAS		
54	18901917065	SAMIR BHUNIA		
55	18901917066	SAINI DUTTA		
56	18901917067	SAGNIK DHARA		
57	18901917068	SABUJ ROY		
58	18901917069	ROUNAK GHOSH		
59	18901917070	ROUNAK BHATTACHARYA		
60	18901917071	RIYA SUTRADHAR		
61	18901917072	RITIKA BISWAS		
62	18901917073	RANAJIT PAL		
63	18901917074	RAJAT BISWAS		
64	18901917075	RAJAN BHARTI		
65	18901917076	RAHUL SAHU		
66	18901917077	PRONAY MANDAL		
67	18901917078	PRIYABRATA DALBERA		
68	18901917079	PRITAM SAHA		
69	18901917080	PRITAM PRADHAN		
70	18901917081	PRITAM KUNDU		
71	18901917082	PRASUN KUMAR DUTTA		
72	18901917083	PRANABESH SAMANTA		
73	18901917084	PINTU ADHIKARY		
74	18901917085	NITISH KUMAR HALDER		
75	18901917086	MRINAL GHOSH		
76	18901917088	MD SAHID ALI		
77	18901917089	MANGALDEEP BHOUMIK		
78	18901917090	MAHMUD UL HASAN		
79	18901917091	KRISHANU DAS		
80	18901917092	KOUSHIK BANERJEE		
81	18901917093	KAUSTAV NAG		
82	18901917094	ISHITA SEN		
83	18901917095	ISHITA SARKAR		
84	18901917096	INDRANIL GHOSAL		
85	18901917097	ENAMUL ANAM		
86	18901917098	DIPTI LAHA		
87	18901917099	DIBYENDU JANA		
88	18901917100	DEEPANWITA MONI		
89	18901917101	DEBOJYOTI JANA		
90	18901917102	DEBKANTA LOUHA		
			a) Schematically represent the Electron Transport Chain depicting the sites for ATP synthesis. b) Explain why conversion of NADH to NAD ⁺ yields 3 molecules of ATP while FADH to FAD ⁺ yields only 2.	CO PT 214.2

Antiecha
20/2/18

Antiecha
20/02/18

Dr. B .C. ROY COLLEGE OF PHARMACY & A.H.S
DR. MEGHANAD SAHA SARANI, BIDHANNAGAR,
DURGAPUR-06

B. PHARM. 1ST YEAR 2ND SEMESTER 2018

PAPER- BIOCHEMISTRY (THEORY)

PAPER CODE- PT-214

LIST OF ASSIGNMENTS

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
91	18901917103	DEBJOTY PAUL		

Deesha
20/2/18

Prank
20/02/18

Dr. B .C. ROY COLLEGE OF PHARMACY & A.H.S
DR. MEGHANAD SAHA SARANI, BIDHANNAGAR,
DURGAPUR-06
B. PHARM. 1ST YEAR 2ND SEMESTER 2018

PAPER- BIOCHEMISTRY (THEORY)

PAPER CODE- PT-214

LIST OF ASSIGNMENTS

SL NO	ROLL NO.	NAME	TOPICS ASSIGNED	MAPPING WITH CO
92	18901917104	DEBDUTTA CHAKRABORTY		
93	18901917105	CHIRANJIT DEY		
94	18901917106	CHANDREIEE MUKHERJEE		
95	18901917107	BITAN GUCHHAIT		
96	18901917108	BISWANATH DAWN		
97	18901917109	BISHAL GOSWAMI		
98	18901917110	BISHAL GANDHI		
99	18901917111	BIKASH KUMAR PANDEY		
100	18901917112	BIKASH BHAKAT		
101	18901917113	BIJAYA MUKHERJEE		
102	18901917114	AVIJIT BEJ		
103	18901917115	ATANU RUIDAS		
104	18901917116	ARMAN NIZAMI		
105	18901917117	ARITRA PAUL		
106	18901917118	ARIJIT GHOSH		CO.PT 214.2
107	18901917119	ARIJEET MONDAL		
108	18901917120	ANWESHA MODAK		
109	18901917121	ANUVAB PURKAIT		
110	18901917122	ANUPAM MAITY	Write a note on	
111	18901917123	ANNESH DAS	a) Pasteur effect and Crabtree effect	
112	18901917124	ANINDITA CHOWDHURY	b) Oxidative phosphorylation	
113	18901917125	ANIKET CHATTOPADHYAY	c) Inhibitors of ETC	
114	18901917126	ANIK LAYEK	d) Inhibitors of oxidative phosphorylation	
115	18901917127	ANAMITRA BHATTACHARYA	e) Glycogen Storage Diseases	
116	18901917128	AMRITA HAZRA	f) Production of ATP and its significance	
117	18901917129	AMITAVA MEDDA	g) Pathways for Gluconeogenesis	
118	18901917130	AMARTYA KUNDU		
119	18901917131	AMARTYA BHOJ		
120	18901917133	ABHISHEK GHOSH		
121	18901917134	ABEER KUMAR SINGH		

Mishra
20/2/18

S. S. Saha
20/02/18

Mapping between the Assignments and course outcomes (CO)

Assignment Topics	CO.PT 214.1	CO.PT 214.2	CO.PT 214.3	CO.PT 214.4
Define the following term: i) Glycolysis, ii) Gluconeogenesis, iii) Glycogenesis, iv) Glycogenolysis, and v) Lipolysis vi) HMP shunt, vii) Krebs Cycle		3		
Why is TCA cycle considered as an open cycle? Schematically represent Krebs cycle.		3		
a) Schematically represent the Electron Transport Chain depicting the sites for ATP synthesis. b) Explain why conversion of NADH to NAD ⁺ yields 3 molecules of ATP while FADH to FAD ⁺ yields only 2.		3		
Write a note on a) Pasteur effect and Crabtree effect b) Oxidative phosphorylation c) Inhibitors of ETC d) Inhibitors of oxidative phosphorylation e) Glycogen Storage Diseases f) Production of ATP and its significance g) Pathways for Gluconeogenesis		3		

Jyotika
20/2/18

fs Panik
20/2/18

Ray
20/2/18

PRINCIPAL

Dr. B. C. Roy College of Pharmacy & A.H.S
Bidhannagar, Durgapur-713206

GROUP – A [Multiple Choice Type Questions]

1. Choose the correct alternatives for all of the following: 5 x 1 = 5
- i) Glucose and galactose are epimers and they differ structurally in orientation of H and OH on:
a) C1 b) C3 c) C2 d) C4
- ii) Which of the following biomolecule transfer genetic information from genes to ribosomes to synthesize protein?
a) DNA b) mRNA c) rRNA d) tRNA
- iii) The subject that deals with thermodynamic principles and its application to biological system is
a) Biochemical Energetics b) Bioinformatics c) Biochemistry d) Biophysics
- iv) Lipase belongs to which class of Enzymes
a) Oxidoreductase b) Transferase c) Hydrolase d) Lyase
- v) The Kinetic effect when K_m value increases and V_{max} remains constant refers to
a) Competitive Inhibition b) Non-competitive Inhibition c) Irreversible Inhibition d) Allosteric Inhibition

GROUP – B: Short Answer Type Questions (Answer any two)

2. Give example of a competitive inhibitor and show how they inhibit the enzyme and become useful as a drug. 2 x 2.5 = 5
[2.5]
3. What is Gibb's Free energy concept? Express free energy as a function of entropy and enthalpy. [2.5]
4. What is Chargaff's rule of DNA composition? [2.5]

GROUP – C: Long Answer Type Questions (Answer any one)

5. Define the following term with examples:
i) Anomers, ii) Coenzyme, iii) Allosteric inhibition, iv) High energy compounds, and v) Mucopolysaccharide 1x 10 = 10
[5 x 2 = 10]
6. a) Differentiate between exergonic and endergonic reaction
b) Derive Michaelis Menten Equation and define K_m with help of this equation. [5 + 5]

Mapping between the QPs of 1st Sessional Examination 2018 of PT-214 and Course Outcomes (CO)

Question No	CO.PT 214.1	CO.PT 214.2	CO.PT 214.3	CO.PT 214.4
1.(i)	1			
1.(ii)	1			
1.(iii)		1		
1.(iv)				1
1.(v)				1
2				2.5
3		2.5		
4			2.5	
5. (i & v)	4			
5. (ii & iii)				4
5. (iv)		2		
6. (a)		5		
6. (b)				5
Total	6	10.5	2.5	13.5

Paishra
9/3/18

S. Panda
09/03/18

GROUP – A [Multiple Choice Type Questions]

1. Choose the correct alternatives for all of the following: 5 x 1 = 5
- i) Which one of these is not a basic amino acid
 a) Lysine b) Threonine c) Arginine d) Histidine
- ii) Oleic acid is abbreviated as
 a) 18:1 b) Δ^9 c) both d) None
- iii) In the final step of electron transport chain, electron is accepted by
 a) NAD⁺ b) CoQc) Cytochrome oxidase d) Oxygen
- iv) An alternative pathway to glycolysis and TCA cycle for the oxidation of glucose that provides NADPH and pentoses is known as
 a) Hexose monophosphate shunt b) Gluconeogenesis c) Glycogenolysis d) EM pathway
- v) Which of the following statement is true for von Gierke's disease
 a) It is one type of glycogen storage disease.
 b) It occurs due to the defect in the enzyme glucose 6-phosphatase.
 c) It is characterized by fasting hypoglycaemia, lactic acidemia, hyperlipidemia, ketosis, etc.
 d) All of the above

GROUP – B [Short Answer Type: Answer any two]

2 x 2.5 = 5

2. Write a short note on denaturation of protein. [2.5]
3. Name the inhibitors of Electron Transport Chain. [2.5]
4. Differentiate between the Pasteur effect and Crabtree effect [2.5]

GROUP – C [Long Answer Type: Answer any one]

1 x 10 = 10

5. a) Schematically represent the Krebs cycle.
 b) Write about oxidative phosphorylation. [5+5 = 10]
6. Describe the steps involved in β - oxidation of Fatty acids. Calculate the energy evolved after complete β - oxidation of Stearic acid. [7+3]

Mapping between the QPs of 2nd Sessional Examination 2018 of PT-214 and Course Outcomes (CO)

Question No	CO.PT 214.1	CO.PT 214.2	CO.PT 214.3	CO.PT 214.4
1.(i)	1			
1.(ii)	1			
1.(iii)		1		
1.(iv)		1		
1.(v)		1		
2	2.5			
3		2.5		
4		2.5		
5. (a)		5		
5. (b)		5		
6		10		
Total	4.5	28		

D. Saha
24/09/18

S. Panja
24/09/18

Quiz Assessment Rubrics

Academic Year: 2017-18

Subject Code: PT-214

No. of Student Present: 100

Question Number	CO	% Correct	% Incorrect	Total
Q1	CO.PT 214.1	88	12	100
Q2	CO.PT 214.1 & 214.3	82	18	100
Q3	CO.PT 214.2	75	25	100
Q4	CO.PT 214.1	80	20	100
Q5	CO.PT 214.2	90	10	100
Q6	CO.PT 214.4	95	5	100
Q7	CO.PT 214.2	81	19	100
Q8	CO.PT 214.1 & 214.3	72	28	100
Q9	CO.PT 214.2 & 214.4	85	15	100
Q10	CO.PT 214.2 & 214.4	92	8	100
Average		84	16	Attainment

3

Attainment Level	Score
$60\% \leq X < 70\%$	1
$70\% \leq X < 80\%$	2
$80\% \leq X \leq 100\%$	3

DP
Stanley
17/09/18

QUIZ QUESTIONS

PAPER- BIOCHEMISTRY (THEORY)

PAPER CODE- PT-214

1. α -Helix is stabilized by

a) Hydrogen bonds

b) Disulphide bonds

Answer: a

2) Guanosine nucleotide is held by the cytosine nucleotide by the number of hydrogen bonds

a) 2

b) 3

Answer: b

3 Carboxylation of acetyl-CoA to malonyl -CoA takes place in presence of

a) -SH group

b) -CH₂OH group

Answer: a

4. Cellulose is made up of the molecules of

a) α -Glucose.

b) β -Glucose.

Answer: b

5. In oxidative phosphorylation, one molecule of reduced flavoprotein produces how many ATPs:

a) 2

b) 3.

Answer: a

6. In the feedback regulation, the end product binds at

a) Active site.

b) Allosteric site.

Answer: b

7. Which pyrimidine nucleotide acts as the high energy intermediate?

a) UTP

b) UGDP

Answer: b

8. The type of RNA that characteristically contain methylated purines and pyrimidines is:

a) t-RNA

b) m-RNA

Answer: b

9. Cytochrome oxidase is poisoned by

a) Cyanide

b) Sulfide

Answer: a

10. A specific inhibitor for succinate dehydrogenase is:

a) Citrate

b) Malonate

Answer: b

Mapping between the Quiz Questions and course outcomes (CO)

Question No	CO.PT 214.1	CO.PT 214.2	CO.PT 214.3	CO.PT 214.4
1	1			
2			1	
3		1		
4	1			
5		1		
6				1
7		1		
8			1	
9		1		
10				1
Total	2	4	2	2

Dalishca
7/04/18

P. P. S. Tamta
07/07/18



**MAULANA ABUL KALAM AZAD UNIVERSITY OF
TECHNOLOGY, WEST BENGAL**

Paper Code : PT-214

BIOCHEMISTRY

Time Allotted: 3 Hours

Full Marks: 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Group-A

1. Choose the correct alternatives for *any ten* of the following questions:

1×10=10

(i) Co-enzyme "Q" is a Lipophilic:

(a) Proton Carrier

(b) Anion Carrier

(c) Cation Carrier

(d) Electro Carrier

CO.PT.214.2

(ii) Which of the following is not an essential Fatty Acid?

(a) Linolenic acid

(b) Linoleic acid

(c) Arachidonic acid

(d) Oleic acid

CO.PT.214.2

(iii) The term "Free Energy" is represented by

(a) ΔG

(b) ΔH

(c) ΔS

(d) ΔG°

CO.PT.214.2

(iv) An example of disaccharide is

(a) Fructose

(b) Galactose

(c) Glucose

(d) Maltose

CO.PT.214.1

(v) Nucleic acids consists of

(a) Nitrogenous base

(b) Pentose sugar

(c) Phosphate group

(d) All of these

CO.PT.214.1

(vi) A measure of disorder or randomness in the system is

(a) Enthalpy

(b) Entropy

(c) Free energy

(d) None of these

CO.PT.214.2

Turn Over

(vii) dNTPs are synthesized from

- (a) De novo pathway
- (b) salvage pathway
- (c) Ribose - 5 - phosphate pathway
- (d) from corresponding NTP

CO.PT.214.1

(viii) Which of the following coenzyme source is not vitamin B complex?

- (a) TPP
- (b) ATP
- (c) NAD
- (d) FMN

CO.PT.214.1

(ix) The essential amino acid is

- (a) Lysine
- (b) Alanine
- (c) Proline
- (d) Glycine

CO.PT.214.1

(x) Excess at deposition in the liver causing deposition of toxic materials in the liver. This condition is known as

- (a) Fatty liver
- (b) Hypercholesterolemia
- (c) Atherosclerosis
- (d) Obesity

(xi) What is the role of formyl-THF?

- (a) Synthesis of DNA and RNA
- (b) Synthesis of Thymidine
- (c) Synthesis of Methionine
- (d) Synthesis of homocysteine

CO.PT.214.1

(xii) The first purine nucleotide synthesized in De novo pathway is

- (a) UMP
- (b) IMP
- (c) CMP
- (d) GMP

CO.PT.214.1

Group-B

Answer any three of the following questions.

5×3=15

2. Write short note on Nucleotide and Nucleoside with examples.

CO.PT.214.2

5

3. Show the Glycolysis cycle pathway schematically.

CO.PT.214.2

5

4. Write short note on oxidative phosphorylation and its significance.

CO.PT.214.2

5

5. Write down the energetics of Citric Acid Cycle.

CO.PT.214.2

5

6. Write, in brief, about the salvage pathway of nucleotides. What is the major fate of dietary nucleotides?

CO.PT.214.2

3+2=5

Group-C

15×3=45

Answer any three of the following questions.

7. What is an enzyme? How is it different from coenzymes? Classify enzymes with examples. What is Line Weaver Burke plot? *CO-PT. 214.1* 3+3+3+6=15
8. Define lipid and classify it with proper example. Write down with a neat sketch the β -oxidation pathway. Write a short note on hyperbilirubinaemia and obesity. *CO-PT. 214.1 & CO-PT. 214.2* 2+3+5+5=15
9. Describe Urea Cycle with figure. Differentiate between deamination and transamination. *CO-PT. 214.2* 7.5+7.5=15
10. Illustrate biosynthesis and significance of Serotonin, Melatonin and Noradrenaline. Write on Albinism, Phenyl Ketonuria. *CO-PT. 214.2* (4×3)+3=15
11. Briefly explain the hormonal regulation of blood glucose level. What is HMP shunt? What is its clinical significance? *CO PT 214.2* 7.5+7.5=15
-

B. Pharm. 1st Year, 2nd Semester (NEW) Theory Examination, 2018

Tabulation Sheet

Register: **SC/PHARM/18**

Code: **PT-210**

S. No.	Quests	Rol No.	Name	1st 50%	2nd 50%	3rd 50%	Best of 300	Att- Assign	Total 150
1		18901317005	SANMAY SAHA	120	120		120	0	120
2		18901317006	SANMAY SARKAR	115			115	0	115
3		18901317007	WASIM SAHAMAN	15.5	11		15.5	0	15.5
4		18901317008	VISHWANANDA SARKAR	11			11	0	11
5		18901317009	TANUJ SALL	16.5	11		16.5	0	16.5
6		18901317010	TANUJ MONDAL	11	11.5		11.5	0	11.5
7		18901317011	TANUJ CHAKRABORTY	15	11		15	0	15
8		18901317012	TANUJ PAN				0	0	0
9		18901317013	TANUJ SENGUPTA	15.5	9		15.5	0	15.5
10		18901317014	SANDEEP SALL	11	9		11	0	11
11		18901317015	SANDEEP MAITY	15.5	14.5		14.5	0	15.5
12		18901317016	SANDEEP SALL	15	11		15	0	15
13		18901317017	SANDEEP SALL	11.5	11		11.5	0	11.5
14		18901317018	SANDEEP SALL	15	11		15	0	15
15		18901317019	SANDEEP SALL	15	8	14	14	11	14
16		18901317020	SANDEEP SALL	14.5	20		20	11	20
17		18901317021	SANDEEP MONDAL	14	11.5		14	11	14
18		18901317022	SANDEEP CHAKRABORTY	15.5	15.5		15.5	9	15.5
19		18901317023	SANDEEP MONDAL	10	15.5		15.5	9	15.5
20		18901317024	SANDEEP MAITY	15	15.5		15.5	11	15.5
21		18901317025	SANDEEP MONDAL				0	0	0
22		18901317026	SANDEEP GHOSH	17.5			17.5	9	17.5
23		18901317027	SANDEEP KONGER	5		11	11	9	11
24		18901317028	SANDEEP DAS		9	12	12	11	11
25		18901317029	SANDEEP SAMANTA				0	9	9
26		18901317030	SANDEEP DAS		7	11	11	9	11
27		18901317031	SANDEEP SALL	8	4	12	12	9	11
28		18901317032	SANDEEP DANDAPAT		9	11	11	9	11
29		18901317033	SANDEEP SALL	14.5	11.5		14.5	9	14.5
30		18901317034	SANDEEP MONDAL		12.5	12	12	9	11
31		18901317035	SANDEEP SALL	5.5	12.5	11	11	9	11
32		18901317036	SANDEEP SALL	14.5			14.5	11	14.5
33		18901317037	SANDEEP SALL	11	14		14	11	14
34		18901317038	SANDEEP CHAKRABORTY	11	13		11	9	11
35		18901317039	SANDEEP SALL	15.5			15.5	9	15.5
36		18901317040	SANDEEP GHOSH	15.5			15.5	9	15.5
37		18901317041	SANDEEP DASMAHAPATRA	11	8		11	9	11
38		18901317042	SANDEEP GHARA				0	4	4
39		18901317043	SANDEEP DEY		15		15	9	15
40		18901317044	SANDEEP MONDAL		8	10	10	9	10
41		18901317045	SANDEEP CHAKRABORTY	8	15		15	10	15
42		18901317046	SANDEEP SALL	8	11.5		11.5	10	11
43		18901317047	SANDEEP SALL	11			11	9	11
44		18901317048	SANDEEP SALL	15			15	9	15


 Signature of the Examiners with date

B. Pharm. 1st Year 2nd Semester (NEW) Theory Examination' 2018

Tabulation Sheet

Paper: BIOCHEMISTRY

Code: PT-214

Sl. No.	University Roll No.	Name	1st Sess (20)	2nd Sess (20)	IT (20)	Best of Two (20)	Attn./ Assign. (10)	Total (30)
45	18901917056	SHUVECHHA DAS	12			12	9	21
46	18901917057	SHREEMA BAKSI	15			15	10	25
47	18901917058	SHRABANI SAMANTA	10.5	4		10.5	10	21
48	18901917059	SHIBAM DEY				0	9	9
49	18901917060	SHANTANU META	10	3		10	9	19
50	18901917061	SAYANTAN MAHAPATRA	11	0.5		11	10	21
51	18901917062	SAYAN KUNDU		2	12	12	8	20
52	18901917063	SAYAN DOLUI				0	5	5
53	18901917064	SAUROV DAS	5	0.5	12	12	8	20
54	18901917065	SAMIR BHUNIA	16	18.75		18.75	10	29
55	18901917066	SAINI DUTTA	19.5	18		19.5	10	30
56	18901917067	SAGNIK DHARA	18	15		18	10	28
57	18901917068	SABUJ ROY				0	5	5
58	18901917069	ROUNAK GHOSH	12.5	9		12.5	9	22
59	18901917070	ROUNAK BHATTACHARYA	13.5	4		13.5	10	24
60	18901917071	RIYA SUTRADHAR	10.5			10.5	10	21
61	18901917072	RITIKA BISWAS	7	1.25	11	11	10	21
62	18901917073	RANAJIT PAL	11	6		11	10	21
63	18901917074	RAJAT BISWAS				0	8	8
64	18901917075	RAJAN BHARTI	5.5	2.5	14	14	10	24
65	18901917076	RAHUL SAHU	4.5	2.5	11	11	9	20
66	18901917077	PRONAY MANDAL	13.5	11.5		13.5	8	22
67	18901917078	PRIYABRATA DALBERA		2.5	12	12	8	20
68	18901917079	PRITAM SAHA	3	1		3	9	12
69	18901917080	PRITAM PRADHAN		1.25	11	11	8	19
70	18901917081	PRITAM KUNDU	16.5	13.5		16.5	10	27
71	18901917082	PRASUN KUMAR DUTTA	2	0	5	5	7	12
72	18901917083	PRANABESH SAMANTA	14			14	10	24
73	18901917084	PINTU ADHIKARY	7	1.25	11	11	10	21
74	18901917085	NITISH KUMAR HALDER		4	11	11	7	18
75	18901917086	MRINAL GHOSH	5		12	12	9	21
76	18901917088	MD SAHID ALI	12			12	8	20
77	18901917089	MANGALDEEP BHOUMIK	12			12	10	22
78	18901917090	MAHMUD UL HASAN				0	5	5
79	18901917091	KRISHANU DAS	9.5	7		9.5	10	20
80	18901917092	KOUSHIK BANERJEE	9.5			9.5	8	18
81	18901917093	KAUSTAV NAG		3	14	14	9	23
82	18901917094	ISHITA SEN	16.5	19		19	9	28
83	18901917095	ISHITA SARKAR		1.25	10	10	8	18
84	18901917096	INDRANIL GHOSAL				0	8	8
85	18901917097	ENAMUL ANAM	2.5		14	14	7	21
86	18901917098	DIPTI LAHA	14			14	10	24
87	18901917099	DIBYENDU JANA	12	19		19	9	28
88	18901917100	DEEPANWITA MONI		15.5		15.5	7	23
89	18901917101	DEBOJYOT JANA	6.5	3	14	14	9	23

Trishna
Signature of the Examiner(s) with date

Dr. B. C. Roy College of Pharmacy and Allied Health Sciences
Durgapur - 713206

B. Pharm. 1st Year 2nd Semester (NEW) Theory Examination' 2018

Tabulation Sheet

Paper:

BIOCHEMISTRY

Code:

PT-214

Sl. No.	University Roll No.	Name	1st Sess (20)	2nd Sess (20)	IT (20)	Best of Two (20)	Attn./ Assign. (10)	Total (30)
90	18901917102	DEBKANTA LOUHA	18			18	10	28
91	18901917103	DEBJOTY PAUL	19.5			19.5	10	30
92	18901917104	DEBDUTTA CHAKRABORTY	13	15		15	9	24
93	18901917105	CHIRANJIT DEY	4	7	12	12	8	20
94	18901917106	CHANDREIEE MUKHERJEE	13.5	16		16	10	26
95	18901917107	BITAN GUCHHAIT		9.5		9.5	9	19
96	18901917108	BISWANATH DAWN		3	12	12	8	20
97	18901917109	BISHAL GOSWAMI	0.5			0.5	7	8
98	18901917110	BISHAL GANDHI	7.5	13		13	9	22
99	18901917111	BIKASH KUMAR PANDEY	16	18.5		18.5	10	29
100	18901917112	BIKASH BHAKAT	10	11		11	10	21
101	18901917113	BIJAYA MUKHERJEE	13.5			13.5	10	24
102	18901917114	AVIJIT BEJ				0	7	7
103	18901917115	ATANU RUIDAS				0	8	8
104	18901917116	ARMAN NIZAMI	2		10	10	9	19
105	18901917117	ARITRA PAUL	8.5	4	12	12	9	21
106	18901917118	ARIJIT GHOSH	4			4	8	12
107	18901917119	ARIJEET MONDAL	2	1.25	14	14	9	23
108	18901917120	ANWESHA MODAK	13.5	17.5		17.5	10	28
109	18901917121	ANUVAB PURKAIT		12.5		12.5	10	23
110	18901917122	ANUPAM MAITY	17	16		17	10	27
111	18901917123	ANNESH DAS	19	18		19	10	29
112	18901917124	ANINDITA CHOWDHURY	9.5	6		9.5	10	20
113	18901917125	ANIKET CHATTOPADHYAY	11.5			11.5	9	21
114	18901917126	ANIK LAYEK				0	8	8
115	18901917127	ANAMITRA BHATTACHARYA	6.5		14	14	8	22
116	18901917128	AMRITA HAZRA	14			14	10	24
117	18901917129	AMITAVA MEDDA		3.75	13	13	6	19
118	18901917130	AMARTYA KUNDU	13.5	0		13.5	10	24
119	18901917131	AMARTYA BHOJ	14.5	9		14.5	10	25
120	18901917133	ABHISHEK GHOSH	6		12	12	9	21
121	18901917134	ABEER KUMAR SINGH	9.5	8		9.5	10	20

Pradeep
 Signature of the Examiner(s) with date 8/6/18

Course Completion Status

Academic Year: 2017-18

Course Name: Biochemistry (Theory) Course code: PT 214

Taught by: POJA MISHRA

Date	Proposed number of units to be covered on date as per lesson plan	Units Completed	% of Completion	Reason for incompleteness	Signature of Faculty(s)	Signature of Principal/Director
10/01/18 to 2/3/18	Units I, V & VI (half) completed.	I, V (half)	50%	-	<i>Pojamishra</i> 02/3/18	<i>Pojamishra</i> 02/06/18 PRINCIPAL Dr. B. C. Roy College of Pharmacy & A.H.S. Bidhannagar, Durgapur-713206
11/3/18 to 08/5/18	Units VII (half) III & IV (completed)	VII (half)	50%	-	<i>Pojamishra</i> 09/05/18	<i>Pojamishra</i> 10/05/18 PRINCIPAL Dr. B. C. Roy College of Pharmacy & A.H.S. Bidhannagar, Durgapur-713206

GRADE	HU 282	PT 213	PT 214	PT 215	PT 216	PT 296	PT 297	PT 298	PTC 203	PT 293
O	7	2	2	5	2	15	6	18	4	4
E	11	10	15	13	4	52	20	31	17	48
A	11	13	19	22	24	43	33	44	19	46
B	21	13	20	31	35	4	31	19	26	13
C	23	27	23	17	31	3	17	3	25	4
D	38	29	23	14	17		6	1	25	
I										
F	6	23	15	15	4		4	1	1	2
TOTAL	117	117	117	117	117	117	117	117	117	117

ANNEXURE I: PROGRAM OUTCOMES

- 1. Pharmacy Knowledge:** Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
- 2. Planning Abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
- 3. Problem analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- 4. Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
- 5. Leadership skills:** Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well-being.
- 6. Professional Identity:** Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
- 7. Pharmaceutical Ethics:** Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- 8. Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
- 9. The Pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
- 10. Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 11. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

PT 214 BIOCHEMISTRY (Theory)

Course Objectives (COB)

COB.PT 214.1: To **acquire** chemistry and biological importance of biological macromolecules *i.e.* carbohydrate, amino acids and proteins, lipids, nucleic acids.

COB. PT 214.2: To **know** the significance of metabolism, bioenergetics and biological oxidation in biological systems.

COB. PT 214.3: To **understand** the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

COB. PT 214.4: To **enumerate** the catalytic role of enzymes, enzyme kinetics with or without inhibitors.

Course Outcomes (CO)

CO. PT 214.1: To **explain** and **understand** the chemistry and biological importance of biomolecules such as carbohydrate, amino acids and proteins, lipids, nucleic acids.

CO.PT 214.2: To **compare** and **identify** the importance of metabolism, bioenergetics in normal or various pathological conditions.

CO.PT 214.3: To **describe** the genetic organization of mammalian genome and **appreciate** the functions of DNA in the synthesis of RNAs and proteins.

CO.PT 214.4: To **illustrate** the catalytic role of enzymes, importance of enzyme inhibitors and coenzyme with examples, therapeutic and diagnostic applications of enzymes and isoenzyme.

f. stam
10/01/18

Ray
10/01/18

PRINCIPAL

Dr. B. C. Roy College of Pharmacy & A.H.S.
Bidhannagar, Durgapur-713206

Course Code: PT 214

Course Name: BIOCHEMISTRY (Theory)

CO Mapping against PO Attributes

CO	CO1			CO2			CO3			CO4			CO5		
	PO	PO Attributes	Score	PO Attributes	Score	PO Attributes	Score	PO Attributes	Score	PO Attributes	Score	PO Attributes	Score		
PO1	Know	Know	3	Know	3	Know	3	Know	3	Know	3	Know	3		
	Comprehend	Comprehend		Comprehend		Comprehend		Comprehend		Comprehend		Comprehend			
	Administer	Administer		Administer		Administer		Administer		Administer		Administer			
PO2	Plan	Plan	-	Plan	-	Plan	-	Plan	-	Plan	-	Plan	-		
	Organise	Organise		Organise		Organise		Organise		Organise		Organise			
	Develop	Develop		Develop		Develop		Develop		Develop		Develop			
PO3	Utilize	Utilize	-	Utilize	-	Utilize	-	Utilize	-	Utilize	-	Utilize	-		
	Think	Think		Think		Think		Think		Think		Think			
	Solve	Solve		Solve		Solve		Solve		Solve		Solve			
PO4	Learn	Learn	2	Learn	3	Learn	3	Learn	3	Learn	3	Learn	3		
	Select	Select		Select		Select		Select		Select		Select			
	Apply	Apply		Apply		Apply		Apply		Apply		Apply			
PO5	Motivate	Motivate	-	Motivate	-	Motivate	-	Motivate	-	Motivate	-	Motivate	-		
	Build	Build		Build		Build		Build		Build		Build			
	Participate	Participate		Participate		Participate		Participate		Participate		Participate			
PO6	Understand	Understand	-	Understand	-	Understand	-	Understand	-	Understand	-	Understand	-		
	Analyze	Analyze		Analyze		Analyze		Analyze		Analyze		Analyze			
	Communicate	Communicate		Communicate		Communicate		Communicate		Communicate		Communicate			
PO7	Honour	Honour	-	Honour	-	Honour	-	Honour	-	Honour	-	Honour	-		
	Decide	Decide		Decide		Decide		Decide		Decide		Decide			
	Apply	Apply		Apply		Apply		Apply		Apply		Apply			
PO8	Comprehend	Comprehend	-	Comprehend	-	Comprehend	-	Comprehend	-	Comprehend	-	Comprehend	-		
	Write	Write		Write		Write		Write		Write		Write			
	Present	Present		Present		Present		Present		Present		Present			
PO9	Reason	Reason	3	Reason	3	Reason	3	Reason	3	Reason	3	Reason	3		
	Assess	Assess		Assess		Assess		Assess		Assess		Assess			
	Take Responsibility	Take Responsibility		Take Responsibility		Take Responsibility		Take Responsibility		Take Responsibility		Take Responsibility			
PO10	Understand	Understand	2	Understand	2	Understand	2	Understand	2	Understand	2	Understand	2		
	Solve	Solve		Solve		Solve		Solve		Solve		Solve			
	Demonstrate	Demonstrate		Demonstrate		Demonstrate		Demonstrate		Demonstrate		Demonstrate			
PO11	Recognize	Recognize	3	Recognize	3	Recognize	3	Recognize	3	Recognize	3	Recognize	3		
	Engage	Engage		Engage		Engage		Engage		Engage		Engage			
	Satisfy	Satisfy		Satisfy		Satisfy		Satisfy		Satisfy		Satisfy			

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PT 214 BIOCHEMISTRY (Theory)

Table 1. Mapping between course objectives and course outcomes or COB-CO matrix of course- PT 214

COB	CO214.1	CO214.2	CO214.3	CO214.4
COB.PT 214.1	3	2	2	-
COB.PT 214.2	2	3	-	2
COB.PT 214.3	3	-	3	2
COB.PT 214.4	-	3	2	3
COB.PT 214N	2.7	2.7	2.5	2.3

Table 2. Mapping between course outcomes and program outcomes or CO-PO matrix of course- PT 214

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO.PT 214.1	3	-	-	2	-	-	-	-	3	2	3
CO.PT 214.2	3	-	-	3	-	-	-	-	3	2	3
CO.PT 214.3	3	-	-	3	-	-	-	-	3	2	3
CO.PT 214.4	3	-	-	3	-	-	-	-	3	2	3
CO.PT 214N	3	-	-	3	-	-	-	-	3	2	3

Table 3. Mapping between the PEOs and course outcomes or CO-PEO matrices of course- PT 214

CO	PEO1	PEO2	PEO3	PEO4	PEO5
CO.PT 214.1	3	3	2	3	-
CO.PT 214.2	3	3	2	3	-
CO.PT 214.3	3	3	2	3	-
CO.PT 214.4	3	3	2	3	-
CO.PT 214N	3	3	2	3	-

Note: Correlation levels 1, 2 or 3 as defined below: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

If there is no correlation, put '-'

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Bidhannagar, Kolkata - 700032

Assessment tools	Frequency (Per SEM)	PEO1	PEO2	PEO3	PEO4	PEO5
Internal examinations	2	3	3	3	3	2
Quiz	2	3	3	3	2	3
Assignments	1	3	3	3	3	3
Project presentations	1 (Graduation Tenure)	3	3	3	2	3
Lab Viva-voce	Weekly	3	3	2	2	2
End-sem Examinations	1	3	3	3	2	2
AVERAGE		3	3	2.8	2.3	2.5

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Bidhannagar, Durgapur-713206

Assessment tools vs PO

Assessment tools	Frequency (Per SEM)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
Internal examinations	2	3	2	2	-	-	3	2	3	2	2	3
Quiz	2	3	-	1	2	2	2	2	1	2	1	2
Assignments	1	3	3	3	3	3	3	2	3	2	2	3
Project presentations	1 (Graduation Tenure)	3	3	3	3	3	3	3	3	3	3	3
Lab Viva-voce	Weekly	3	1	2	2	1	2	2	2	2	2	3
End-sem Examinations	1	3	3	3	3	3	3	3	3	3	3	3



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Bidhannagar, Durgapur.

PROGRAM EDUCATIONAL OBJECTIVES

1. To produce Under Graduates who would have developed a strong background in Pharmaceutical Sciences and ability to use these ideas in their chosen fields of specialization.
2. To produce Under Graduates who have the ability to demonstrate technical competence in the fields of Pharmaceutical Sciences.
3. To produce Under Graduates who would attain professional competence through life-long learning such as advanced degrees, professional registration and other professional activities.
4. To produce Under Graduates who function effectively in a different pharmaceutical field.
5. To produce Under Graduates who would be able to take individual responsibility and to work as a part of a team towards the fulfilment of both individual and organizational goals.

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Scope: Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.

Objectives: Upon completion of course student shall able to

1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

Course Content:

UNIT I

08 Hours

- **Biomolecules**

Introduction, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins.

- **Bioenergetics**

Concept of free energy, endergonic and exergonic reaction, Relationship between free energy, enthalpy and entropy; Redox potential.

Energy rich compounds; classification; biological significances of ATP and cyclic AMP

UNIT II

10 Hours

- **Carbohydrate metabolism**

Glycolysis – Pathway, energetics and significance

Citric acid cycle- Pathway, energetics and significance

HMP shunt and its significance: Glucose-6-Phosphate dehydrogenase (G6PD) deficiency

Glycogen metabolism Pathways and glycogen storage diseases (GSD)

Gluconeogenesis- Pathway and its significance

Hormonal regulation of blood glucose level and Diabetes mellitus

- **Biological oxidation**

Electron transport chain (ETC) and its mechanism.

Scope: Biochemistry deals with complete understanding of the molecular level of the chemical process associated with living cells. The scope of the subject is provided by biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.

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- **Carbohydrate metabolism**

Glycolysis – Pathway, energetics and significance

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Glycogen metabolism Pathways and glycogen storage diseases (GSD)

Gluconeogenesis- Pathway and its significance

Hormonal regulation of blood glucose level and Diabetes mellitus

- **Biological oxidation**

Electron transport chain (ETC) and its mechanism

Oxidative phosphorylation & its mechanism and substrate level phosphorylation

Inhibitors ETC and oxidative phosphorylation/Uncouplers

UNIT III

10 Hours

- **Lipid metabolism**

β -Oxidation of saturated fatty acid (Palmitic acid)

Formation and utilization of ketone bodies; ketoacidosis De novo synthesis of fatty acids (Palmitic a

Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D

Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity.

- **Amino acid metabolism**

General reactions of amino acid metabolism: Transamination, deamination, & decarboxylation, urea cycle and its disorders

Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenylketonuria, Albinism, alcaptonuria, tyrosinemia)

Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline, adrenaline

Catabolism of heme; hyperbilirubinemia and jaundice

UNIT IV

10 Hours

- **Nucleic acid metabolism and genetic information transfer**

Biosynthesis of purine and pyrimidine nucleotides

Catabolism of purine nucleotides and Hyperuricemia and Gout disease

Organization of mammalian genome

Structure of DNA and RNA and their functions

DNA replication (semi conservative model)

Transcription or RNA synthesis

Genetic code, Translation or Protein synthesis and inhibitors

UNIT V

07 Hours

- **Enzymes**

Introduction, properties, nomenclature and IUB classification of enzymes

Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)

Enzyme inhibitors with examples

Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation

Therapeutic and diagnostic applications of enzymes and isoenzymes

Coenzymes –Structure and biochemical functions

PT 297 BIOCHEMISTRY (Practical)

4 Hours / Week

1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and starch)
2. Identification tests for Proteins (albumin and Casein)
3. Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method)
4. Qualitative analysis of urine for abnormal constituents
5. Determination of blood creatinine
6. Determination of blood sugar
7. Determination of serum total cholesterol
8. Preparation of buffer solution and measurement of pH
9. Study of enzymatic hydrolysis of starch
10. Determination of Salivary amylase activity
11. Study the effect of Temperature on Salivary amylase activity.
12. Study the effect of substrate concentration on salivary amylase activity.



LESSON PLAN: Biochemistry


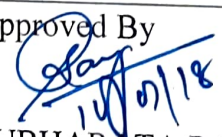
Paper code: PT 214

B. Pharm. 1st Year 2nd Semester

No. of Classes/ week: 3+1T

Page 1 of 2

CLASS	MODULE	TOPICS
1	UNIT 1	Introduction, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins
2	UNIT 1	Concept of free energy, endergonic and exergonic reaction
3	UNIT 1	Relationship between free energy, enthalpy and entropy; Redox potential
4	UNIT 1	Energy rich compounds; classification; biological significances of ATP and cyclic AMP
5	UNIT 2	Glycolysis- Pathway, energetics and significance
6	UNIT 2	Citric acid cycle- Pathway, energetics and significances
7	UNIT 2	HMP shunt and its significances; Glucose-6-phosphate dehydrogenase (G6PD) deficiency
8	UNIT 2	Glycogen metabolism pathways and glycogen storage diseases (GSD)
9	UNIT 2	Gluconeogenesis- Pathway and its significances
10	UNIT 2	Hormonal regulation of blood glucose level and Diabetes mellitus
11	UNIT 2	Electron transport chain (ETC) and its mechanism
12	UNIT 2	Oxidative Phosphorylation and its mechanism, substrate level phosphorylation
13	UNIT 2	Inhibitors of ETC and oxidative phosphorylation/ Uncouplers
14	UNIT 3	β - Oxidation of saturated fatty acid (Palmitic acid)
15	UNIT 3	Formation and utilization of ketone bodies; ketoacidosis, De novo synthesis of fatty acids (Palmitic acid)
16	UNIT 3	Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and Vit. D
17	UNIT 3	Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity
18	UNIT 3	General reactions of amino acid metabolism: Transamination, deamination & decarboxylation, Urea cycle and its disorders
19	UNIT 3	Catabolism of Phenylalanine and Tyrosine and their metabolic disorders (Phenyketonuria, Albinism, Alkeptonuria, Tyrosinemia)
20	UNIT 3	Catabolism of Phenylalanine and Tyrosine and their metabolic disorders (Phenyketonuria, Albinism, Alkeptonuria, Tyrosinemia)
21	UNIT 3	Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline and adrenaline

22	UNIT 3	Catabolism of heme, hyperbilirubinemia and jaundice
23	UNIT 4	Biosynthesis of Purine and Pyrimidine nucleotides; Catabolism of Purine nucleotides and Hyperuricemia and Gout
24,25	UNIT 4	Disease organization of mammalian genome
26,27,28	UNIT 4	Structure of DNA and RNA, their functions, DNA replication (semi-conservative model), transcription and RNA synthesis
29,30,31	UNIT 5	Introduction, Properties, nomenclature and IUB classification of enzymes, Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)
32	UNIT 5	Enzyme inhibitors with example
33	UNIT 5	Regulation of Enzymes: Enzyme induction and repression, allosteric enzymes regulation
34,35	UNIT 5	Therapeutic and diagnostic applications of enzymes and isoenzymes
36	UNIT 5	Co-enzymes: Structure and biochemical functions
37-45	-----	REVISION/TUTORIAL
Prepared By  (DR. PARTHASARATHI PANDA) Asst. Professor, BCRC		Approved By  (PROF. SUBHARATA RAY) Principal, BCRC

STUDY MATERIAL CONTENTS OUTLINE

PAPER- BIOCHEMISTRY (Theory)

PAPER CODE- PT 214

UNIT I

Biomolecules

1. Introduction to Biochemistry and Biomolecules will discuss from Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005. Definition, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:
 - Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 9-26.
 - Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 238-272.
 - Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 23-43.
 - Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 102-110.
2. Introduction, definition, classification, chemical nature and biological importance of lipids will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:
 - Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 28-41.
 - Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 45-64.
3. Definition, classification, chemical nature and biological role of nucleic acids will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:
 - Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 69-83.
 - Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 273-300.
 - Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 215-224.
 - Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 286-292.

4. Definition, classification, chemical nature and biological role of amino acids and proteins will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:
- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 43-67.
 - Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 75-189.
 - Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 76-94.

Bioenergetics

Introduction, definition of bioenergetics, free energy, Concept of Energy rich compounds, endergonic and exergonic reaction, Relationship between free energy, enthalpy and entropy, Redox potential, Energy rich compounds, classification; biological significances of ATP and cyclic AMP will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:

- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 221-224.
- Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 489-507.
- Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 80-85.

UNIT II: Carbohydrate metabolism

Introduction to metabolism and carbohydrate metabolism, Pathway, energetics and significance of Glycolysis and Citric acid cycle, HMP shunt and its significance, Glucose-6-Phosphate dehydrogenase (G6PD) deficiency, Glycogen metabolism Pathways and glycogen storage diseases (GSD), Gluconeogenesis- Pathway and significance, Hormonal regulation of blood glucose level and Diabetes mellitus will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:

- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 244-283.
- Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 521-630.
- Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 326-388.
- Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 122-172.

Biological oxidation

Introduction to biological oxidation, Electron transport chain (ETC) and its mechanism, Oxidative phosphorylation & its mechanism and substrate level phosphorylation, Inhibitors ETC and oxidative phosphorylation/Uncouplers will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:

- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 224-237.
- Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 238-272.
- Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 507-520.
- Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 86-91.

UNIT III: Lipid metabolism

Introduction to lipid metabolism, β -Oxidation of saturated fatty acid (Palmitic acid), Formation and utilization of ketone bodies, ketoacidosis De novo synthesis of fatty acids (Palmitic acid), Biological significance of cholesterol and conversion of bile acids, steroid hormone and vitamin D cholesterol into Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity will discuss by preparing delivering notes by consulting the following books:

- Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 631-655.
- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 285-328.
- Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 399-460.
- Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 180-229.

Amino acid metabolism

Introduction to amino acid metabolism, General reactions of amino acid metabolism: Transamination, deamination & decarboxylation, urea cycle and its disorders, Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenyketonuria, Albinism, alkeptonuria, tyrosinemia), Synthesis and significance of biological substances such as 5-HT, melatonin, dopamine, noradrenaline, adrenaline; Catabolism of heme; hyperbilirubinemia and jaundice will discuss to the students through preparing PowerPoint (ppt slide) by taking materials from the following books:

- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 330-378.

- Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 833-861.
- Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 471-528.
- Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 242-269.

UNIT IV: Nucleic acid metabolism and genetic information transfer

Biosynthesis of purine and pyrimidine nucleotides, Catabolism of purine nucleotides and Hyperuricemia and Gout disease, Organization of mammalian genome, Structure of DNA and RNA and their functions, DNA replication (semi conservative model), Transcription or RNA synthesis, Genetic code, Translation or Protein synthesis and inhibitors will discuss to the students through preparing PowerPoint (ppt slide)/lecture notes by taking materials from the following books:

- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 387-400, 523-576.
- Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 861-878.
- Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 260-285, 293-297.
- Harper's Biochemistry. 26th edition / R. K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell, 2003, pp 293-373.

UNIT V: Enzymes

Introduction, properties, nomenclature and IUB classification of enzymes, definition of enzyme, holoenzyme, apoenzyme, isoenzyme and coenzyme, Enzyme kinetics (Michaelis plot, Line Weaver Burke plot), Enzyme inhibitors with examples, Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation, Therapeutic and diagnostic applications of enzymes and isoenzymes, Structure and biochemical functions of coenzymes will discuss by preparing delivering notes by consulting the following books:

- Lehninger A. Principles of Biochemistry. – New York. – W.H. Freeman and Company. 2005, pp 190-233.
- Satyanarayana U., Chakrapani U. "Biochemistry", 4th Edn, Elsevier, New Delhi, 2013, pp 9-26.
- Chatterjea M. N., Shinde R. Textbook of Medical Biochemistry, 8th Edn., Jaypee Brother Medical Publishers (P) Ltd., New Delhi, 2012, pp 121-133.