SILIGURI INSTITUTE OF TECHNOLOGY

CIVIL ENGINEERING

COURSE FILE

7TH SEM, 4TH YEAR, 2021

PAPER DESCRIPTION: Demonstrate and understanding of advanced fluid mechanics principles. Implementation of geotechnical engineering principles. To get a knowledge of various types of dam and their design criteria. Understand the different elements of dam.

PAPER CODE : CE 704B

Course Description

Course Title: Hydraulic Structures

Code: CE 704B

Semester: 7th Year: 4th

Name of the Faculty: Pooja Barma

E-mail: poojabarma09@gmail.com

Class Schedule		
Lecture		
TUESDAY (10:00 a.m. to 10:50a.m.)	THURSDAY (10:00 a.m. to 10:50a.m.)	FRIDAY (12:30p.m. to 1:20p.m.)

Hours for meeting students:3 HOURS	
TUESDAY (10:00 a.m. to 10:50a.m.)	1 HOUR
THURSDAY (10:00 a.m. to 10:50a.m.)	1 HOUR
FRIDAY (12:30p.m. to 1:20p.m.)	1 HOUR

i) Course Objective

This course is designed to study the fundamental concept, design and maintenance of hydraulic structures. Also to provide basic understanding of heavy structures like dam have to study. To give the basic idea of canal regulation, canal headwork and cross-drainage.

ii) Course Outcomes

i. After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes.

The student will be able to:

		Target
CO1	Identify the characteristics of various types of dams and their selection procedure.	50% students will achieve 60% marks
CO2	Perform the reconnaissance survey and, geophysical investigations necessary for selection of suitable dam site	50% students will achieve 60% marks
CO3	Estimate forces acting on a gravity dams and perform stability analysis.	50% students will achieve 60% marks

CO4	Estimate the seepage loss through embankment dams and suggest necessary remedial measures.	50% students will achieve 60% marks
CO5	Calculate the discharge through the overflow section and design the appropriate energy dissipation structures.	40% students will achieve 60% marks

ii. Once the student has successfully complete this course, he/she must be able to answer the following questions or perform / demonstrate the following:

Sl.	Question	BT Level
1.	The safety of a hydraulic structure founded on pervious foundation can be ensured by	2
2.	A trapezoidal notch fall can maintain normal water depth in the upstream channel at	2
3.	According to Khosla's theory , the exit gradient in the absence of a downstream cut-off is	1
4.	Function of Canal drops	2
5.	According to Bligh's Creep theory, the creep length is	1
6.	The discharge co-efficient of an Ogee-shaped spillway is	1
7.	What is canal drop structure?	2
8.	Why is canal drop provided?	2
9.	What is Bligh's theory?	2
10.	What are the different limitations of Bligh's theory?	2
11.	What are barrage and weir? Differentiate them with sketches.	2
12.	An impervious floor of a weir on permeable soil is16 m long and has sheet piles at both the ends. The upstream pile is 4m deep and the downstream pile is 5m deep. The weir creates a net head of 2.5m. Neglecting thickness of the weir floor, calculate the uplift pressures at the junction of the inner faces of the piles with the weir floor, by using Khosla's theory.	3
13.	Design the salient dimensions of a siphon well drop for the following particulars. Fall: 3.6m, general ground level: +163.46m, full supply depth= 75cm, bed level u/s=+162.8m, discharge= 1cumec, bead width upstream and downstream= 2.4m.	4
14.	Which of the following CD works carry drainage over the canal?	2

15.	The drainage water is sometimes allowed to join the canal water to augment canal supplies through a hydraulic structure is called as _____	2
16.	The type of canal alignment which involves maximum CD works is a _____	1
17.	Earthen dams are _____	1
18.	Multiple arch dam is an example of _____	2
19.	Which type of dam design gives a wider choice of materials including earth-fill and rock-fill dams?	2
20.	A narrow V-shaped valley indicates the choice of _____	2
21.	The central core of the zoned embankment type earth dam _____	2
22.	A gravity dam is subjected to hydrodynamic pressure caused by _____	2
23.	The factor of safety against overturning generally varies between _____	1
24.	What is the maximum permissible tensile stress for high concrete gravity dam under worst conditions?	1
25.	Calculate the value of minimum base width for an elementary triangular concrete gravity dam supporting 72 m height of reservoir water and full uplift? (Take specific gravity of concrete as 2.4 and coefficient of friction as 0.7)	3
26.	For usual values of permissible compressive stress and specific gravity of concrete, a high concrete gravity is the one whose height exceeds	1
27.	Calculate the top width of the dam if the height of water stored is 84m.	3
28.	A phreatic line in seepage analysis is defined as the line on which pressure is	1
29.	Calculate the top width of the earth dam of height 50 m.	3
30.	A gravity dam is subjected to hydrodynamic pressure caused by	2
31.	What is the value of horizontal destabilizing force caused by the formation of waves in a storage reservoir having a fetch of 52 km due to high wind of 172 km/h?	3
32.	A weir is constructed to withstand water 4.5m deep. The floor length is 25m with sheet piles 5m and 8m deep at either ends. The weir is erected at a distance of 6m on the upstream end of the floor. Find using Bling's theory the uplift pressures at 6m, 12m and 18m from the upstream end of the floor and find thickness of the floor at those points.	4
33.	An earthen dam made of a homogeneous material has the following data: coefficient of the permeability of dam material = $5x\ 10^{-4}$cm/sec. level of top of dam= 200m. level of deepest river bed= 178m. H.F.L. of reservoir= 197.5m. Width of the top of dam= 4.5m. upstream slope= 2:1. Determine the phreatic line of the dam section	4

34.	The particulars of a concrete dam are- • RL of top of dam = 145m • Freeboard= 3 • Upstream face inclined at a slope of 0.25(H) : 1(v) for RL 120m upto the base • Downstream face sloped at 0.8 (H) : 1(v) from RL 140 m upto the base • RL of base = 110m • Top width= 6m Calculate the forces acting on the dam due to self weight, hydrostatic thrust and uplift pressure. Determine the stability of the dam when the reservoir is full. Determine the stresses included in the dam in full condition.	4

iii) Topic/Unit/Chapter Layout

Topic/Unit/Chapter	Lecture Hours	Laboratory hours
1. Diversion Head works	4	
2. Theories of seepage and Design of weirs and Barrages	6	
3. Hydraulic structures for canals	4	
4. Cross-Drainage Works	4	
5. Dam	2	
6. Earthen Dams	6	
7. Gravity Dam	6	

iv)Textbooks

1. Irrigation Engineering and hydraulic structures, Santosh Kumar Garg, Khanna Publishers
2. Irrigation, water Resources and Water Power Engg. Dr.P.N. Modi, Standard Book House,Delhi-6

Reference books :

1. Structural Analysis, R. Agor
2. Structural Analysis, (Vol I & Vol II), S.S.S Bhavikatti, Vikas Publishing House Pvt. Ltd.

(v) Evaluation Scheme

1) Theory

Evaluation Criteria	Marks
Internal Exam*	15
Quiz / assignment	10
Attendance	5
University Exam/External Exam	70
Total	100

* Two internal examinations are conducted; based on those two tests, average of them are considered in a scale of 15.

Course target attainment levels:

Attainment Level	Inference
Attainment Level 1	40% of the students have attained more than the target level of that CO
Attainment Level 2	50% of the students have attained more than the target level of that CO
Attainment Level 3	60% of the students have attained more than the target level of that CO

Overall Course Attainment Target = 70% of the students will get “A” Grade

Target has been set on the basis of last year’s performance / result by the students, student quality this year and difficulty level of the course.

University Grading System:

Grade	Marks
O	90% and above
E	80 – 89.9%
A	70 – 79.9%
B	60 – 69.9%
C	50 – 59.9%
D	40 – 49.9%
F	Below 40%

(vi) Mapping of Course Outcomes and Program Outcomes:

Course Outcomes	Program Outcomes												PSOs	
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12	1.	2.
CO1	1													
CO2	1			1									1	
CO3		2											1	
CO4		2											1	
CO5		2											1	

1 = courses in which the student will be exposed to a topic (BT level 1& 2)
2 = courses in which students will gain competency in that area (BT level 3-4)
3= courses in which students will master that skill (BT level 5-6)

CO1 to CO4 partially satisfies application of knowledge of mathematics and science in solving engineering problems. (PO1, PO2).

CO5 partially satisfies application of knowledge of mathematics and science in solving engineering problems. (PO1, PO2).

CO5 minimally satisfies the condition of designing system components and solutions. (PO3).

(vii) Delivery Methodology

Outcome	Method	Supporting Tools	Demonstration
CO1	Video lectures	Googlemeet, google classroom	Videos & presentation
CO2	Video lectures	Google meet, google classroom	Video lecture, presentation, videos
CO3	Video lectures	Google meet, google classroom	Video lecture, presentation
CO4	Video lectures	Google meet, google classroom	Video lecture, presentation
CO5	Video lectures	Google meet, google classroom	Video lecture, presentation

(ix) A. Weekly Lesson Plan

Week	Lectures	Tutorial	Practical	Assignment
1	Diversion Head works: Necessity, Difference between weir and Barrage, Type of Weirs			
	Selection of site, layout and description of each part			
	Effects of construction of a weir on the river regime			
2	Causes of failure of weirs on permeable foundation and their remedies			Assignment 1: Numerical on weir
	Theories of seepage and Design of weirs and Barrages: Failure of Hydraulic Structures Founded on Pervious foundations: i) By piping ii) By Direct uplift			
	Bligh's creep theory of seepage flow, Khosla's theory & concept of flow nets			
3	Concept of exit gradient and critical exit gradient			
	Khosla's method of independent variable for determination of pressures and exit gradient for seepage below a weir or a barrage			

	Khosla's method of independent variable for determination of pressures and exit gradient for seepage below a weir or a barrage			
4	Necessary corrections, examples			Assignment 2: Numerical on canal fall
	Hydraulic structures for canals: Canal falls – necessity, locations			
	Types and description of Ogee fall			
5	Trapezoidal-notch fall			
	Syphon well drop. Examples			
	Cross-Drainage Works: Necessity			
6	Types of cross drainage			
	Types of cross drainage			
	Selection of a suitable type of cross drainage			
7	Dam (General): Definition, classification of Dams			
	Factors governing selection of type of dam, selection of suitable site for a dam.			
	Earthen Dams: Introduction, Types of Earthen Dams			
8	Methods of Construction of earthen Dam. Causes of failure,			
	Design Criteria, Determination of line of seepage or phreatic line in Earthen Dam			
	Seepage control in Earthen Dam, Examples			
9	Gravity Dam: Definition, Typical cross- section			
	Forces acting on Gravity Dam			
	Combination of forces for design			

10	Combination of forces for design			Assignment 3: Numerical on Gravity Dam
	Mode of failure and criteria for structural stability of Gravity Dams			
	Principal and shear stresses			
11	Elementary profile of a Gravity Dam			
	Concept of High and low Gravity Dam			
	Concept of High and low Gravity Dam			
12	Spillways: Types, Location, Essential requirements			
	Spillway capacity			
	Components of spillway			
13	Energy Dissipators, Stilling basins			

B. Daily Lesson Plan

Lecture	TOPIC/UNIT/ CHAPTER	Plan date	Execution date	Details of home work/assignment/mini project/ICT used/other	Details of topics that are beyond syllabus (if any)	Remarks
1	Diversion Head works: Necessity, Difference between weir and Barrage, Type of Weirs	19-08-2020	19-08-2020			
2	Selection of site, layout and description of each part	21-08-2020	21-08-2020			
3	Effects of construction of a weir on the	24-08-2020	24-08-2020			

	river regime					
4	Causes of failure of weirs on permeable foundation and their remedies	**25-08-2020**	**25-08-2020**			
5	Theories of seepage and Design of weirs and Barrages: Failure of Hydraulic Structures Founded on Pervious foundations: i) By piping ii) By Direct uplift	**26-08-2020**	**26-08-2020**			
6	Bligh's creep theory of seepage flow, Khosla's theory & concept of flow nets	**27-08-2020**	**27-08-2020**	Assignment 1: Numerical on weir		
7	Concept of exit gradient and critical exit gradient	**31-08-2020**	**31-08-2020**			
8	Khosla's method of independent variable for determination of pressures and exit gradient for seepage below a weir or a barrage	**01-09-2020**	**01-09-2020**			
9	Khosla's method of independent variable for determination of pressures and exit gradient for seepage below a weir or a barrage	**04-09-2020**	**04-09-2020**			
10	Necessary corrections, examples	**08-09-2020**	**08-09-2020**			
11	Hydraulic structures for canals: Canal falls – necessity, locations	**10-09-2020**	**10-09-2020**			
12	Types and description of Ogee fall	**14-09-2020**	**14-09-2020**	Assignment 2: Numerical on canal fall		
13	Trapezoidal-notch fall	**21-09-2020**	**21-09-2020**			
14	Syphon well drop. Examples	**24-09-2020**	**24-09-2020**			
15	Cross-Drainage Works: Necessity	**28-09-2020**	**28-09-2020**			
16	Types of cross drainage	**01-10-2020**	**01-10-2020**			
17	Types of cross drainage	**05-10-2020**	**05-10-2020**			
18	Selection of a suitable type of cross drainage	**08-10-2020**	**08-10-2020**			
19	Dam (General): Definition, classification of Dams	**13-10-2020**	**13-10-2020**			
20	Factors governing selection of type of dam, selection of suitable	**15-10-2020**	**15-10-2020**			

	site for a dam.					
21	Earthen Dams: Introduction, Types of Earthen Dams	**20-10-2020**	**20-10-2020**			
22	Methods of Construction of earthen Dam. Causes of failure,	**04-11-2020**	**04-11-2020**			
23	Design Criteria, Determination of line of seepage or phreatic line in Earthen Dam	**25-11-2020**	**25-11-2020**			
24	Seepage control in Earthen Dam, Examples	**30-11-2020**	**30-11-2020**			
25	Gravity Dam: Definition, Typical cross- section	**08-12-2020**	**08-12-2020**			
26	Forces acting on Gravity Dam	**11-12-2020**	**11-12-2020**			
27	Combination of forces for design	**14-12-2020**	**14-12-2020**			
28	Combination of forces for design	**22-12-2020**	**22-12-2020**			
29	Mode of failure and criteria for structural stability of Gravity Dams	**07-01-2021**	**07-01-2021**			
30	Principal and shear stresses	**13-01-2021**	**13-01-2021**	Assignment 3: Numerical on Gravity Dam		
31	Elementary profile of a Gravity Dam	**19-01-2021**	**19-01-2021**			
32	Concept of High and low Gravity Dam	**21-01-2021**	**21-01-2021**			
33	Concept of High and low Gravity Dam	**22-01-2021**	**22-01-2021**			
34	Spillways: Types, Location, Essential requirements	**28-01-2021**	**28-01-2021**			
35	Spillway capacity	**10-02-2021**	**10-02-2021**			
36	Components of spillway	**22-02-2021**	**22-02-2021**			
37	Energy Dissipators, Stilling basins	**22-02-2021**	**22-02-2021**			

(x) Teaching Strategy / Method

(xa) Strategy to support weak students

1. Conduction of extra classes during doubt clearing classes and free slots
2. Special attention towards the weaker students in the class to encourage them
3. Seminar session by the students

(xb) Strategy to encourage bright students

1. Allowing them to help their fellow- mates in clearing the doubts
2. Encouraging them by giving them extra grace marks in internals for their regularity
3. Making them leaders for conduction of various team works

(xc) Efforts to keep students engaged

1. Conduction of seminars by the students
2. Conduction of quizzes
3. Making them solve assignments on regular basis

(XI) Analysis of Students performance in the course

INTERNAL ASSESSMENT

INTERNAL ASSESMENT RECORD

Subject with code: Hydraulic Structures (CE 704B)

Semester : 7th

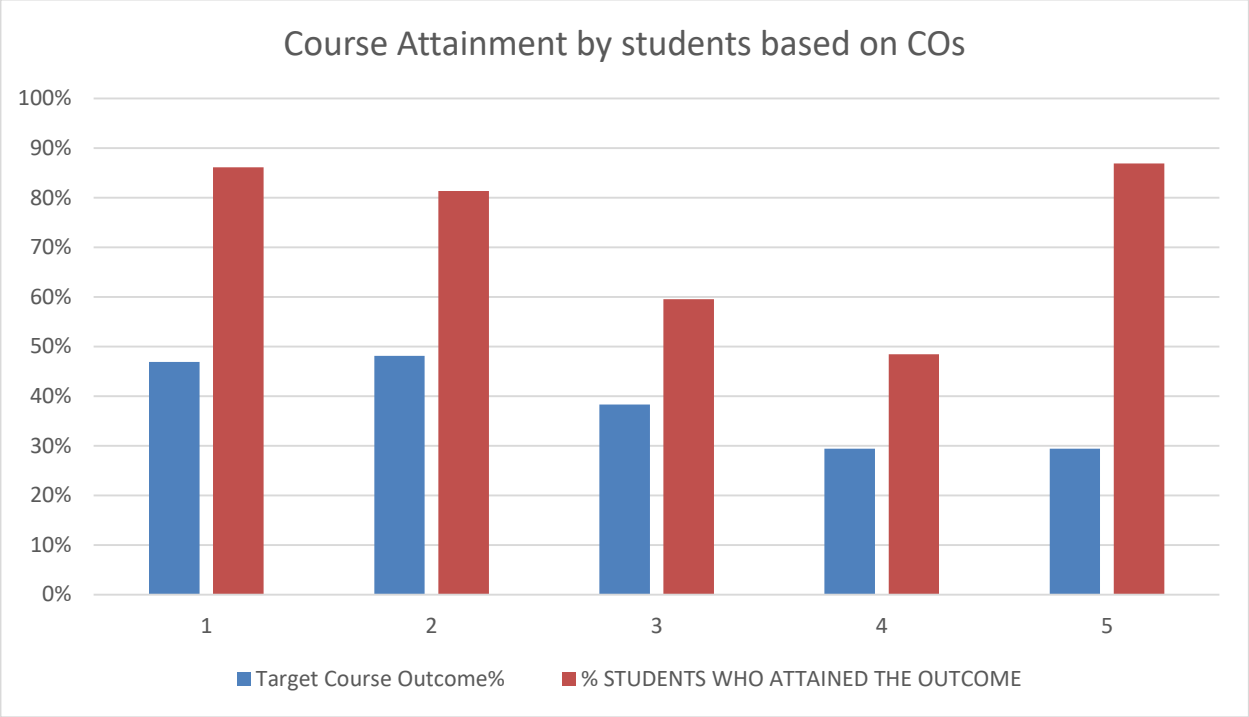
Discipline: CE

Sl.	Roll No.	Name	Attendance		Internal Examination			Assignment / Quiz	Total
			Total	Marks	1st	2nd	Avg.		
1	11901317011	Wang Dorjee Tamang	5	3	8	6.5	7.25	7	18
2	11901317012	Souvik Barua	5	4	11.5	11.5	11.5	9	25
3	11901317013	Shubhadip Ghosh	5	3	12.5	10	11.25	9	24
4	11901317014	Sanketh Banik	5	5	10.5	10	10.25	8	24
5	11901317015	Rojina Pradhan	5	5	14	14	14	10	29
6	11901317016	Rhythm Roy	5	4	12	10.5	11.25	9	25
7	11901317017	Preetam Deb	5	4	12.5	11	11.75	9	25
8	11901317018	Pratik Debnath	5	3	9	8.5	8.75	7	19

9	11901317019	Pranav Kumar Mishra	5	3	11	10.5	10.75	8	22
10	11901317020	Piyush Raj	5	4	13	12	12.5	9	6
11	11901317021	Motluba Parveen	5	4	14	14	14	9	27
12	11901317022	Manish Kumar Ray	5	5	9.5	8.5	9	7	21
13	11901317023	Kishan Kumar Agarwal	5	3	11.5	10	10.75	9	23
14	11901317024	Kaustav Sarkar	5	4	9.5	9	9.25	9	23
15	11901317025	Gokul Barman	5	4	13	13	13	10	27
16	11901317026	Debosree Roy	5	4	12	11.5	11.75	9	25
17	11901317027	Debojyoti Mantri	5	5	14	13	13.5	10	29
18	11901317028	Debojit Basak	5	3	11.5	10.5	11	10	24
19	11901317030	Debjyoti Roy	5	3	11.5	10.5	11	10	24
20	11901317031	Debargho Saha	5	3	9	8.5	8.75	6	18
21	11901317032	Debadrita Majumdar	5	4	12	11.5	11.75	9	25
22	11901317033	Bittu Barman	5	3	13	12.5	12.75	9	25
23	11901317034	Bikash Singh	5	4	10.5	9.5	10	10	24
24	11901317035	Bhaskar Sarkar	5	4	12	11.5	11.75	9	25
25	11901317036	Barna Shreshtra Sarkar	5	4	12.5	12	12.25	9	26
26	11901317037	Avisek Acharya	5	4	12.5	12.5	12.5	9	26
27	11901317038	Ashutosh Kumar	5	3	11	10.5	10.75	8	22
28	11901317039	Arpan Mandal	5	4	12	11	11.5	10	25.5
29	11901317040	Anurup Roy	5	4	9	8.5	8.75	7	20
30	11901317041	Anshuman	5	5	10.5	9	9.75	7	22
31	11901317042	Anirban Dutta	5	3	12	9.5	10.75	10	24
32	11901317043	Abhishek Roy	5	4	11.5	10	10.75	10	25
33	11901317044	Abhishek Kumar Singh	5	3	11	10	10.5	9	22.5
34	11901318001	Vivek Gazmer	5	4	12.5	11.5	12	9	25
35	11901318002	Vivek Ekka	5	3	12	11	11.5	9	23.5
36	11901318003	Ujjal Barman	5	3	12.5	12	12.25	9	24
37	11901318004	Supratim Dutta	5	3	12	10.5	11.25	10	25
38	11901318006	Subhankar Sen	5	5	14	13.5	13.75	10	28
39	11901318007	Subham Sarkar	5	3	10.5	9.5	10	9	22
40	11901318008	Subham Saha	5	3	10.5	10	10.25	8	22
41	11901318009	Shuvam Hazra	5	3	10.5	10	10.25	6	20
42	11901318010	Shubham Sarkar	5	5	12.5	12	12.25	7	24
43	11901318011	Shouvik Debnath	5	3	9	8.5	8.75	6	18
44	11901318013	Sanjib Kumar Barman	5	5	10	9.5	9.75	6	21
45	11901318014	Sanchita Sarkar	5	4	10	9	9.5	9	22.5
46	11901318015	Ritwik Ghosh	5	3	12.5	13	12.75	10	26
47	11901318017	Pritama Roy	5	5	11.5	10.5	11	8	24
48	11901318018	Pritam Dutta	5	4	13.5	13	13.25	9	26
49	11901318019	Pratik Chandra Dey	5	4	13.5	13	13.25	9	26

50	11901318020	Pranta Das	5	3	11	9.5	10.25	9	22
51	11901318021	Pankaj Kumar Mahato	5	5	11.5	11	11.25	9	25
52	11901318022	Mukesh Roy	5	4	9.5	9.5	9.5	9	23
53	11901318023	Mrinalini Paul	5	3	11	10.5	10.75	8	22
54	11901318024	Moubani Waddedar	5	5	9.5	9	9.25	8	23
55	11901318025	Koushik Chandra Sarkar	5	4	10	7.5	8.75	9	22
56	11901318026	Jotin Roy	5	5	10	10	10	8	23
57	11901318027	Bibhas Basu	5	5	12	11.5	11.75	9	26
58	11901318028	Baishakhi Roy	5	3	13.5	13	13.25	9	25
59	11901318029	Arnab Sarkar	5	3	12.5	12.5	12.5	9	24.5
60	11901318030	Arindam Guha	5	5	10.5	10	10.25	8	23
61	11901318031	Archisman Karjee	5	4	10.5	10.5	10.5	8	22.5
62	11901318032	Anannya Guha	5	3	14.5	11.5	13	10	26
63	11901318033	Alik Raha	5	5	13	12.5	12.75	9	27

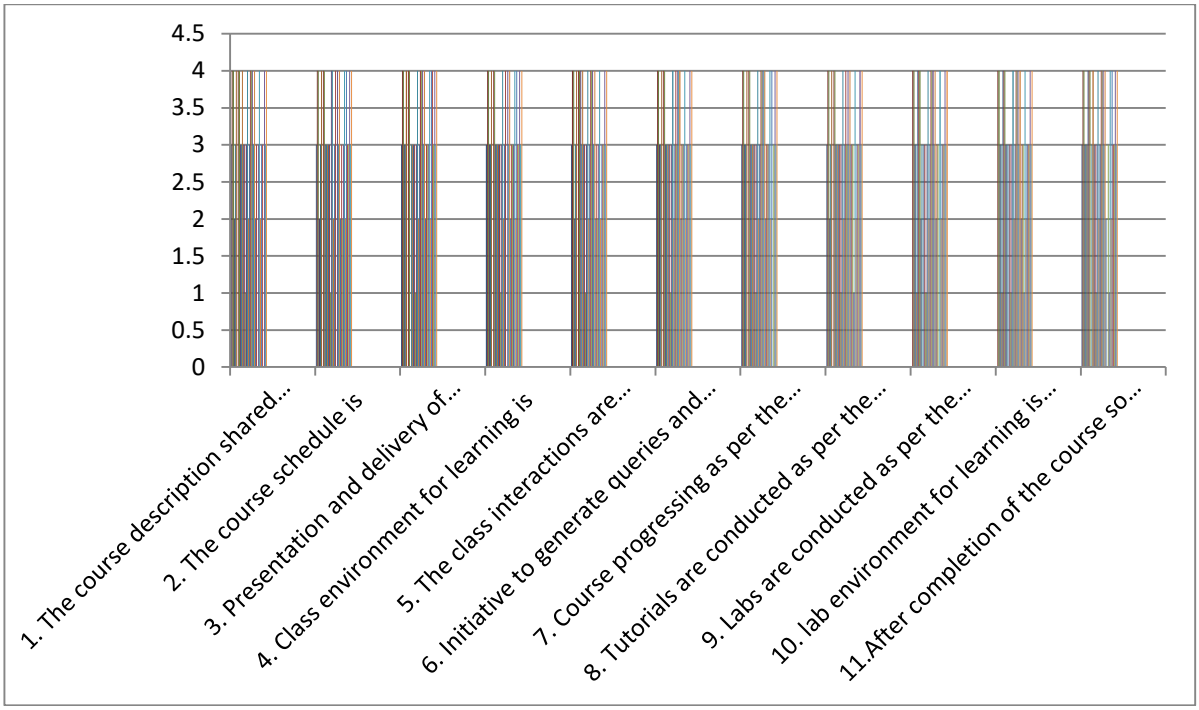
(XI) Attainment Record



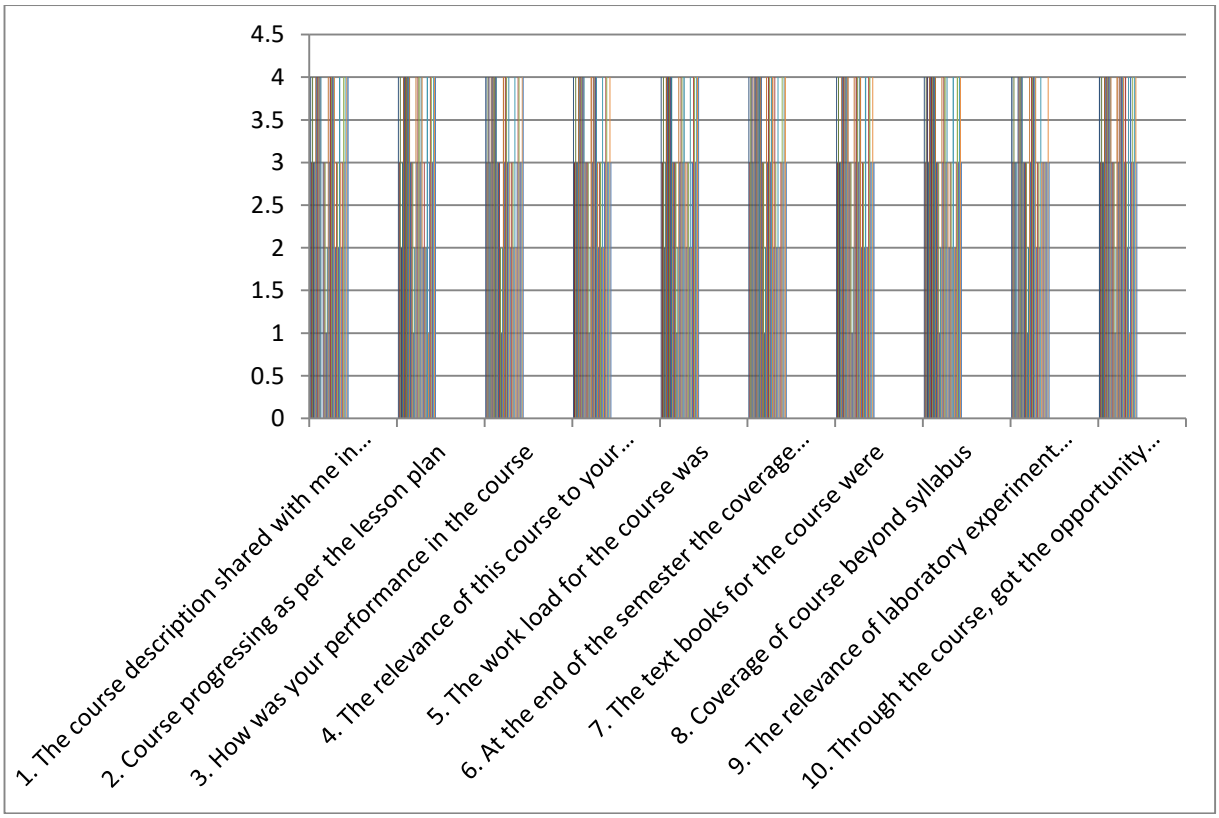
(XII) University Result

(XII) Analysis of Student Feed Back

Formative feedback:



Summative feedback:



(XIII) Teacher Self-Assessment (at the completion of course)

After completion of the course we observe the following
(i) More classes related to CO4 is needed to improve the attainment
(ii) Number of numerical to be solved in class should be increase to make the class more interactive
(iii) More mock test should be conducted (specially online) to increase the numerical solving pace of the students.

ATTENDANCE SHEET (Lecture)

Subject with code: Hydraulic Structures (CE 704B)

Semester : 7th **Discipline: CE**

Sl.	Roll No.	Name	19-08-2020	21-08-2020	24-08-2020	25-08-2020	26-08-2020	27-08-2020	31-08-2020	01-09-2020	04-09-2020	08-09-2020	10-09-2020	14-09-2020	21-09-2020	24-09-2020	28-09-2020	01-10-2020	05-10-2020	08-10-2020
1	11901317011	Wang Dorjee Tamang	A	p	p	A	P	P	A	A	P	P	P	A	A	A	P	P	P	P
2	11901317012	Souvik Barua	P	P	A	P	P	P	P	P	A	P	P	P	A	A	A	P	P	P
3	11901317013	Shubhadip Ghosh	P	A	A	A	A	P	P	A	A	A	P	A	P	P	P	A	A	A
4	11901317014	Sanketh Banik	A	A	A	P	P	P	P	A	P	P	A	A	A	P	P	P	P	P
5	11901317015	Rojina Pradhan	P	P	P	P	P	P	A	P	A	P	P	P	P	P	P	A	P	P
6	11901317016	Rhythm Roy	P	P	P	P	A	A	A	P	P	P	P	P	P	P	P	P	P	P
7	11901317017	Preetam Deb	P	A	P	P	A	P	A	P	P	P	P	P	A	P	P	P	P	A
8	11901317018	Pratik Debnath	P	A	A	A	P	A	P	P	P	P	A	P	P	P	P	P	A	A
9	11901317019	Pranav Kumar Mishra	P	P	P	P	A	A	P	A	P	A	P	P	A	P	P	A	A	P
10	11901317020	Piyush Raj	P	P	P	P	P	A	A	P	P	A	A	A	P	P	P	A	A	A
11	11901317021	Motluba Parveen	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P
12	11901317022	Manish Kumar Ray	P	P	P	P	P	P	A	P	A	P	P	P	P	P	P	P	A	P
13	11901317023	Kishan Kumar Agarwal	P	P	P	P	P	P	A	P	A	P	P	P	P	P	P	A	P	P
14	11901317024	Kaustav Sarkar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	P	P
15	11901317025	Gokul Barman	P	P	P	A	P	P	P	P	P	P	P	P	P	A	P	P	P	P
16	11901317026	Debosree Roy	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P
17	11901317027	Debojyoti Mantri	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P
18	11901317028	Debojit Basak	A	A	A	P	P	A	P	P	P	P	P	P	P	P	P	A	P	P
19	11901317030	Debjyoti Roy	A	A	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
20	11901317031	Debargho Saha	A	A	A	A	A	A	A	P	A	A	A	P	A	A	A	P	P	A
21	11901317032	Debadrita Majumdar	P	P	A	A	A	P	P	A	P	P	P	P	P	P	A	P	P	P
22	11901317033	Bittu Barman	P	P	P	P	P	P	P	A	P	P	A	P	P	P	P	P	A	P
23	11901317034	Bikash Singh	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	A	A	A
24	11901317035	Bhaskar Sarkar	P	P	P	P	P	P	P	P	P	A	P	P	P	A	P	P	P	P
25	11901317036	Barna Shreshtra Sarkar	A	p	p	A	P	P	A	A	P	P	P	A	A	A	P	P	P	P

Sl.	Roll No.	Name	13-10-2020	15-10-2020	20-10-2020	04-11-2020	25-11-2020	30-11-2020	08-12-2020	11-12-2020	14-12-2020	22-12-2020	07-01-2021	13-01-2021	19-01-2021	21-01-2021	22-01-2021	28-01-2021	10-02-2021	22-02-2021
1	11901317011	Wang Dorjee Tamang	A	A	P	A	P	P	A	A	p	p	A	P	P	p	P	A	A	A
2	11901317012	Souvik Barua	P	A	P	P	A	P	P	P	P	P	A	A	P	P	P	P	P	P
3	11901317013	Shubhadip Ghosh	A	P	A	A	P	P	P	A	A	A	P	P	A	P	P	A	P	P
4	11901317014	Sanketh Banik	P	A	A	A	P	P	P	P	P	P	P	P	A	P	P	P	P	P
5	11901317015	Rojina Pradhan	P	P	P	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P
6	11901317016	Rhythm Roy	A	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
7	11901317017	Preetam Deb	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P
8	11901317018	Pratik Debnath	A	P	P	A	A	A	A	A	A	A	A	A	A	A	P	A	A	A
9	11901317019	Pranav Kumar Mishra	A	P	P	P	A	A	P	A	A	P	A	P	A	P	A	P	P	P
10	11901317020	Piyush Raj	A	A	A	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P
11	11901317021	Motluba Parveen	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	A	P	P
12	11901317022	Manish Kumar Ray	A	P	P	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P
13	11901317023	Kishan Kumar Agarwal	P	P	P	A	A	A	P	P	P	P	A	P	P	P	P	P	P	P
14	11901317024	Kaustav Sarkar	P	P	A	P	A	A	P	P	A	P	P	A	P	P	P	P	P	P
15	11901317025	Gokul Barman	P	P	P	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P
16	11901317026	Debosree Roy	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
17	11901317027	Debojyoti Mantri	P	P	P	A	A	A	P	P	P	P	P	P	P	P	A	P	P	P
18	11901317028	Debojit Basak	P	P	P	A	A	P	P	A	A	A	A	A	A	A	A	A	P	A
19	11901317030	Debjyoti Roy	P	P	P	P	P	P	P	P	P	A	A	A	P	P	P	P	P	P
20	11901317031	Debargho Saha	A	A	P	A	P	P	A	A	A	A	A	P	P	A	P	A	P	A
21	11901317032	Debadrita Majumdar	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P
22	11901317033	Bittu Barman	P	P	P	P	A	A	P	P	A	A	P	P	P	P	P	A	A	A
23	11901317034	Bikash Singh	P	P	A	P	P	P	P	P	P	A	A	P	P	P	P	P	P	P
24	11901317035	Bhaskar Sarkar	A	P	A	A	P	P	P	P	A	P	P	A	P	P	P	P	P	P
25	11901317036	Barna Shreshtra Sarkar	A	A	P	A	P	P	A	A	p	p	A	P	P	p	P	A	A	A

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Subject with code: Hydraulic Structures (CE 704B)

Semester : 7th **Discipline: CE**

Sl.	Roll No.	Name	19-08-2020	21-08-2020	24-08-2020	25-08-2020	26-08-2020	27-08-2020	31-08-2020	01-09-2020	04-09-2020	08-09-2020	10-09-2020	14-09-2020	21-09-2020	24-09-2020	28-09-2020	01-10-2020	05-10-2020	08-10-2020
26	11901317037	Avisek Acharya	A	P	P	P	P	P	A	P	P	P	**P**	P	P	P	P	**A**	P	A
27	11901317038	Ashutosh Kumar	P	P	**P**	P	P	P	A	**P**	A	P	**P**	P	P	P	P	A	P	P
28	11901317039	Arpan Mandal	**A**	**P**	**P**	**A**	P	A	A	**P**	**P**	**P**	**P**	A	P	A	P	P	**P**	**A**
29	11901317040	Anurup Roy	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
30	11901317041	Anshuman	**P**	**P**	**P**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**P**	**P**	**P**	**A**	**A**	**A**	**P**
31	11901317042	Anirban Dutta	P	P	A	A	P	P	A	P	P	**AP**	P	**P**	P	A	P	**P**	P	P
32	11901317043	Abhishek Roy	P	P	P	A	P	P	P	A	A	**P**	P	P	P	**A**	P	**P**	**A**	P
33	11901317044	Abhishek Kumar Singh	P	P	A	A	**A**	**P**	P	**A**	A	**P**	A	P	P	**P**	P	P	**P**	P
34	11901318001	Vivek Gazmer	A	A	P	P	P	P	P	P	P	P	P	P	P	A	A	A	P	A
35	11901318002	Vivek Ekka	P	P	P	P	P	P	A	A	P	P	P	P	P	P	P	P	P	P
36	11901318003	Ujjal Barman	A	P	P	A	A	**A**	P	A	**P**	P	P	P	P	A	P	P	P	A
37	11901318004	Supratim Dutta	P	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
38	11901318006	Subhankar Sen	P	P	P	P	P	P	P	P	P	P	P	A	A	P	P	P	P	P
39	11901318007	Subham Sarkar	A	P	P	P	P	P	A	A	A	P	**P**	P	P	P	P	**A**	P	A
40	11901318008	Subham Saha	A	P	P	A	A	A	P	P	P	A	A	A	P	P	P	P	A	A
41	11901318009	Shuvam Hazra	A	P	P	A	A	A	P	P	P	P	A	A	P	A	A	A	P	A
42	11901318010	Shubham Sarkar	A	P	P	P	P	P	A	A	A	P	**P**	P	P	P	P	**A**	P	A
43	11901318011	Shouvik Debnath	P	P	P	A	A	P	P	A	A	**P**	A	A	P	**A**	P	**P**	**A**	P
44	11901318013	Sanjib Kumar Barman	P	A	A	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
45	11901318014	Sanchita Sarkar	P	P	P	P	P	P	P	P	P	P	A	A	A	P	A	A	A	P
46	11901318015	Ritwik Ghosh	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P	**A**	P	A
47	11901318017	Pritama Roy	A	A	P	A	A	A	P	A	A	P	P	P	P	A	A	P	P	A
48	11901318018	Pritam Dutta	A	P	P	P	P	P	P	P	P	A	A	A	P	P	P	A	A	A
49	11901318019	Pratik Chandra Dey	A	P	P	P	P	P	A	A	A	P	**P**	P	P	P	P	**A**	P	A
50	11901318020	Pranta Das	P	P	P	A	A	P	P	A	A	**P**	A	A	P	**A**	P	**P**	**A**	P
51	11901318021	Pankaj Kumar Mahato	**P**	**P**	**P**	**A**	P	P	P	**P**	**P**	**P**	**P**	P	P	A	P	P	**P**	**P**
52	11901318022	Mukesh Roy	A	A	P	P	A	A	A	P	P	A	P	P	A	P	P	P	A	A

Sl.	Roll No.	Name	13-10-2020	15-10-2020	20-10-2020	04-11-2020	25-11-2020	30-11-2020	08-12-2020	11-12-2020	14-12-2020	22-12-2020	07-01-2021	13-01-2021	19-01-2021	21-01-2021	22-01-2021	28-01-2021	10-02-2021	22-02-2021
26	11901317037	Avisek Acharya	P	P	P	P	P	A	P	P	P	P	A	P	P	P	A	P	P	P
27	11901317038	Ashutosh Kumar	P	P	P	P	P	A	P	P	A	P	A	P	P	P	P	P	P	P
28	11901317039	Arpan Mandal	P	A	P	A	P	P	P	A	P	P	A	A	A	A	A	A	A	P
29	11901317040	Anurup Roy	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	P
30	11901317041	Anshuman	A	P	P	P	A	A	A	P	P	P	P	P	P	P	P	A	P	P
31	11901317042	Anirban Dutta	P	P	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P	P
32	11901317043	Abhishek Roy	P	P	P	A	P	P	A	P	P	P	A	P	P	P	P	P	P	P
33	11901317044	Abhishek Kumar Singh	A	P	P	P	P	P	P	P	A	P	P	A	P	P	P	P	P	P
34	11901318001	Vivek Gazmer	P	P	P	A	A	A	P	P	P	A	A	A	P	P	P	P	P	P
35	11901318002	Vivek Ekka	P	P	P	P	P	P	P	P	P	P	A	P	P	P	P	P	P	P
36	11901318003	Ujjal Barman	P	P	P	A	P	P	P	P	P	A	A	P	A	P	A	P	P	P
37	11901318004	Supratim Dutta	P	P	P	P	P	P	P	P	P	P	P	A	A	P	A	P	P	A
38	11901318006	Subhankar Sen	P	A	A	P	P	P	P	P	P	A	A	A	P	P	P	P	P	P
39	11901318007	Subham Sarkar	P	P	P	P	P	A	P	P	P	P	P	P	P	A	P	P	P	P
40	11901318008	Subham Saha	A	A	P	P	P	P	A	A	A	P	A	P	A	A	P	A	P	P
41	11901318009	Shuvam Hazra	A	A	P	A	A	A	P	A	P	P	A	P	A	P	A	A	A	P
42	11901318010	Shubham Sarkar	P	P	P	P	P	A	P	P	A	A	P	P	P	P	P	A	A	A
43	11901318011	Shouvik Debnath	A	A	P	A	P	P	A	P	A	P	P	P	P	P	P	P	P	P
44	11901318013	Sanjib Kumar Barman	P	P	P	P	P	P	P	P	A	A	P	P	P	A	P	P	P	P
45	11901318014	Sanchita Sarkar	A	A	A	P	A	A	A	P	P	P	A	P	P	P	P	P	P	P
46	11901318015	Ritwik Ghosh	P	P	P	P	P	A	P	A	A	P	P	P	P	P	P	P	P	P
47	11901318017	Pritama Roy	P	P	P	A	A	P	P	P	P	A	A	A	P	P	A	A	A	P
48	11901318018	Pritam Dutta	A	A	P	P	P	A	A	P	P	P	P	P	P	P	P	P	P	P
49	11901318019	Pratik Chandra Dey	P	P	P	P	P	A	P	P	P	A	A	P	P	P	P	P	P	P
50	11901318020	Pranta Das	A	A	P	A	P	P	A	P	P	A	P	P	P	P	A	P	P	P
51	11901318021	Pankaj Kumar Mahato	P	P	P	A	P	P	P	A	P	P	A	A	A	P	P	P	P	P
52	11901318022	Mukesh Roy	P	P	A	P	P	P	A	P	P	P	P	P	P	A	P	P	P	P

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Subject with code: Hydraulic Structures (CE 704B)

Semester : 7th **Discipline: CE**

Sl.	Roll No.	Name	19-08-2020	21-08-2020	24-08-2020	25-08-2020	26-08-2020	27-08-2020	31-08-2020	01-09-2020	04-09-2020	08-09-2020	10-09-2020	14-09-2020	21-09-2020	24-09-2020	28-09-2020	01-10-2020	05-10-2020	08-10-2020
53	11901318023	Mrinalini Paul	P	P	P	P	P	P	P	P	P	P	P	A	A	p	P	A	A	A
54	11901318024	Moubani Waddedar	P	A	P	P	P	A	P	P	P	P	A	P	P	P	P	P	P	P
55	11901318025	Koushik Chandra Sarkar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
56	11901318026	Jotin Roy	A	P	P	P	P	P	A	P	P	P	P	P	P	P	P	P	A	P
57	11901318027	Bibhas Basu	P	P	P	A	A	P	P	A	A	**P**	A	A	P	**P**	P	P	P	P
58	11901318028	Baishakhi Roy	A	P	p	p	p	A	p	P	A	p	P	p	A	P	P	A	A	P
59	11901318029	Arnab Sarkar	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
60	11901318030	Arindam Guha	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
61	11901318031	Archisman Karjee	A	A	P	A	A	A	P	A	A	P	A	A	P	P	P	P	P	P
62	11901318032	Anannya Guha	P	P	P	A	P	P	P	P	A	**P**	A	A	P	**A**	P	**P**	**P**	P
63	11901318033	Alik Raha	A	A	P	P	P	P	P	A	P	P	P	P	A	P	P	P	P	P

Sl.	Roll No.	Name	13-10-2020	15-10-2020	20-10-2020	04-11-2020	25-11-2020	30-11-2020	08-12-2020	11-12-2020	14-12-2020	22-12-2020	07-01-2021	13-01-2021	19-01-2021	21-01-2021	22-01-2021	28-01-2021	10-02-2021	22-02-2021
53	11901318023	Mrinalini Paul	A	P	A	A	A	A	A	P	P	P	P	A	A	P	P	A	A	P
54	11901318024	Moubani Waddedar	A	P	P	P	P	P	P	P	**P**	P	**P**	P	**P**	P	**P**	P	**A**	P
55	11901318025	Koushik Chandra Sarkar	A	P	A	P	A	P	P	P	P	P	P	P	P	P	P	A	P	A
56	11901318026	Jotin Roy	P	A	P	P	P	P	P	P	**P**	P	**P**	P	**P**	P	**P**	P	**P**	P
57	11901318027	Bibhas Basu	A	P	P	P	P	P	A	P	P	P	A	P	P	P	P	P	P	P
58	11901318028	Baishakhi Roy	A	P	A	P	A	A	P	**A**	P	**P**	P	A	P	**P**	P	A	A	P
59	11901318029	Arnab Sarkar	A	P	P	P	P	P	P	A	P	P	P	A	A	A	A	P	P	P
60	11901318030	Arindam Guha	A	P	A	P	A	P	P	P	P	P	P	P	P	P	P	P	P	P
61	11901318031	Archisman Karjee	P	A	P	P	P	P	P	P	P	A	P	P	P	P	A	P	P	P
62	11901318032	Anannya Guha	P	A	A	**P**	P	P	**P**	P	P	A	A	A	A	P	P	P	P	P
63	11901318033	Alik Raha	P	P	P	P	A	P	P	P	**P**	P	**A**	P	**P**	P	**P**	P	**P**	P