1.1.1 Supporting Documents for Curriculum Planning and Implementation

Course File Index File

Academic Year: 2020-21 – Check List for Theory

Name of the Course Instructor:

Name of the Course: **Code:**

Sl. No	Name of the Documents
1	Academic calendar
2	Subject preference and Allotment
3	Result Analysis
4	List of Students
5	Class Time Table
6	Individual Time Table
7	Syllabus
8	Lesson Plan
9	Module wise Question Bank
10	Module wise Notes
11	PPT
12	Model SEE Question Paper
13	Internal Assessment Test
13a	Question Paper
13b	Scheme
13c	Other Assessment
13d	IA Marks List
13e	Internal Examination Result Analysis
13f	Corrective Action Report
13g	Remedial Classes
13h	Counselling Report
14	Feedback 1
15	Feedback 2
16	Final IA Marks List
17	Impact Analysis
18	Course End Survey
19	SEE Marks List with Analysis
20	Blue Books
21	Students Attendance

Note: Blue books to be submitted to the HOD

12/1/22
PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K. G. F- 563120

Signature of HOD **Signature of Course Instructor**

1.1.1 Supporting Documents for Curriculum Planning and Implementation

Course File Index File

Academic Year: 2020-21 – Check List for Theory

Name of the Course Instructor:

Name of the Course: **Code:**

Sl. No	Name of the Documents
1	Academic calendar
2	Subject preference and Allotment
3	Result Analysis
4	List of Students
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6	Individual Time Table
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11	PPT
12	Model SEE Question Paper
13	Internal Assessment Test
13a	Question Paper
13b	Scheme
13c	Other Assessment
13d	IA Marks List
13e	Internal Examination Result Analysis
13f	Corrective Action Report
13g	Remedial Classes
13h	Counselling Report
14	Feedback 1
15	Feedback 2
16	Final IA Marks List
17	Impact Analysis
18	Course End Survey
19	SEE Marks List with Analysis
20	Blue Books
21	Students Attendance

Note: Blue books to be submitted to the HOD

Signature of HOD **Signature of Course Instructor**

Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

(Estd. 1986) Oorgaum, Kolar Gold Fields, Karnataka – 563120
(Affiliated to VTU, Belgaum, Approved by AICTE - New Delhi)

Academic Year: 2020-21 – Check List for Practical

Name of the Course Instructor:

Name of the Course: **Code:**

Sl. No	Name of the Documents
1	Academic calendar
2	Subject preference and Allotment
3	Result Analysis
4	Batch wise List of Students
5	Class Time Table
6	Individual Time Table
7	Syllabus
8	Lesson Plan
9	Lab Question Bank
10	Viva Questions & Answers
11	Continuous Evaluation
12	Final IA Marks List
13	SEE Marks List with Analysis
14	Test Pink Book
15	Practical Records
16	Lab Manual
17	Students Attendance

Note: No. 13, 14, 15, 16 to be submitted to HOD

Signature of HOD **Signature of Course Instructor**

Dr.T. THIMMAIAH INSTITUTE OF TECHNOLOGY

(Estd. 1986) Oorgaum, Kolar Gold Fields, Karnataka – 563120
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Academic Year 2020-21 (EVEN SEM) - Check list for Theory

Name of the Course Instructor: Paul Prashanth Kumar

Name of the Course: Mineral Processing & Fuel Technology **Code:** 18MN63

No.	Contents	Remarks		
1	Academic calendar	VTU (as received from VTU), College, Department F .No. : Dr TTIT/IQAC/2020 -21/005C		
2	Subject preference and Allotment	F No.: Dr TTIT/IQAC/2020 – 21/006A		
3	Result History	F. No. : Dr TTIT/IQAC/2020 – 21/001A		
4	List of students	F. No: Dr TTIT/IQAC/2020 – 21/002AP		
5	Class Time Table	F. No : Dr TTIT/IQAC/2020 – 21/007A		
6	Individual Time Table	F. No : Dr TTIT/IQAC/2020 – 21/007B		
7	Syllabus	As per university signed by HOD and Principal		
8	Lesson Plan	ERP		
9	Module wise Question Bank	Preferably Typed		
10	Module wise Notes	Hardcopy or Softcopy		
11	PPT	Softcopy		
12	Model SEE Question Paper	VTU Old Question Paper (Minimum 5)		
13	Internal Assessment Test	IA – 1	IA – 2	IA - 3
13a	Question Paper			
13b	Scheme	059B	059B	059B
13c	Other Assessment	069A	069A	069A
13d	IA Marks List	066IAP	066IAP	066IAP
13e	Internal Examination Result Analysis	066RAP	066RAP	066RAP
13f	Corrective Action report	066BP	066BP	066BP
13g	Remedial Classes	066CP	O66CP	066CP
13h	Counselling Report	066DP	066DP	066DP
14	Feedback 1	F. No. : Dr TTIT/IQAC/2020 – 21/011C		
15	Feedback 2	F. No. : Dr TTIT/IQAC/2020 – 21/011H		
16	Final IA Marks list	F. No. : Dr TTIT/IQAC/2020 – 21/066AP		
17	Impact Analysis	F. No. : Dr TTIT/IQAC/2020 – 21/00EP		
18	Course End Survey	Excel Sheet		
19	SEE Marks list with Analysis	CO – PO Attainment Calculator (NBA format)		
20	Blue books			
21	Students Attendance	ERP		

Note: Blue books to be submitted to the HOD

25.4.2021

Signature of HOD

HOD
DEPARTMENT OF MINING ENGINEERING
Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY
OORGAUM, KGF- 563 120

25/4/2021

Signature of Course Instructor

10/1/21

PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K. G. F- 563120

Revised-Academic Calendar of EVEN semesters of UG Programmes for 2020-2021

Semesters / EVENTS	IV semester B.E./B.Tech.	IV semester B.Arch./ B.Plan.	VI semester B.E./B.Tech.	VI semester B.Plan./B.Arch	VIII semester B.E./B.Tech.	VIII semester B.Plan.	VIII semester B.Arch
Commencement of EVEN Semester	19.04.2021	19.04.2021	19.04.2021	19.04.2021	19.04.2021	19.04.2021	19.04.2021
Last Working day of EVEN Semester	07.08.2021	07.08.2021	07.08.2021	07.08.2021	#20.07.2021	#20.07.2021	07.08.2021
Practical Examinations	09.08.2021 To 19.08.2021	09.08.2021 To 19.08.2021	09.08.2021 To 19.08.2021	---	---	---	---
Theory Examinations	23.08.2021 To 09.09.2021	23.08.2021 To 09.09.2021	23.08.2021 To 09.09.2021	10.08.2021 To 31.08.2021	22.07.2021 To 30.07.2021	22.07.2021 To 30.07.2021	10.08.2021 To 17.08.2021
Internship	---	---	---	---	---	---	---
Internship Viva-Voce/ Project Viva-Voce	---	---	---	---	02.08.2021 To 06.08.2021	---	---
Professional training / Organization study	---	---	---	---	---	---	---
Commencement of ODD Semester	13.09.2021	13.09.2021	13.09.2021	13.09.2021	---	---	23.08.2021

- The classroom sessions for even the semester should commence from the dates mentioned above.
- The institute needs to function for **six days** a week with additional hours **(Saturday is a full working day).** #if required the college can plan to have extra classes even on Sundays also.
- If any of the above dates are declared to be a holiday then the corresponding event will come into effect on the next working day.
- Notification regarding the Calendar of Events relating to the conduct of **University Examinations** will be issued by the Registrar (Evaluation) from time to time.
- The faculty/staff shall be available to undertake any work assigned by the university.
- Academic Calendar may be modified based on guidelines/directions issued in the future by MHRD/UGC/AICTE/State Government.
- Revised Academic Calendar is also applicable for **Autonomous Colleges.** In case if any changes are to be affected by Autonomous Colleges in the academic terms and examination schedule, they could do so with the approval of the University.

PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K. G. F- 563120

21.04.2021
REGISTRAR

Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY, OORGAUM, KGF-563120

ACADEMIC YEAR 2020-2021 (EVEN SEMESTER)

ACADEMIC CALENDAR FOR 4th & 6th SEMESTER APRIL 2021 TO SEPTEMBER 2021

WEEK	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
W01	April 18	April 19 Commencement of Even Sem	April 20	April 21	April 22	April 23	April 24
W02	April 25	April 26	April 27	April 28	April 29	April 30	May 01 Holiday
W03	May 02	May 03	May 04	May 05	May 06	May 07	May 08
W04	May 09	May 10	May 11	May 12	May 13	May 14 Holiday	May 15
W05	May 16	May 17	May 18	May 19	May 20	May 21	May 22
W06	May 23	May 24 1st TEST	May 25 1st TEST	May 26 1st TEST	May 27	May 28	May 29
W07	May 30	May 31	June 01	June 02	June 03	June 04	June 05
W08	June 06	June 07	June 08	June 09	June 10	June 11	June 12
W09	June 13	June 14	June 15	June 16	June 17	June 18	June 19
W10	June 20	June 21	June 22	June 23	June 24	June 25	June 26
W11	June 27	June 28 2nd TEST	June 29 2nd TEST	June 30 2nd TEST	July 01	July 02	July 03
W12	July 04	July 05	July 06	July 07	July 08	July 09 International Conference	July 10 International Conference
W13	July 11	July 12 Project Expo	July 13	July 14	July 15	July 16	July 17
W14	July 18	July 19	July 20	July 21 Holiday	July 22	July 23	July 24
W15	July 25	July 26	July 27	July 28	July 29 3rd TEST	July 30 3rd TEST	July 31 3rd TEST
W16	Aug 01	Aug 02	Aug 03	Aug 04	Aug 05	Aug 06	Aug 07 Last Working day
W17	Aug 08	Aug 09 Commencement of practical Exam	Aug 10	Aug 11	Aug 12	Aug 13	Aug 14
W18	Aug 15	Aug 16	Aug 17	Aug 18	Aug 19 End of practical Exam	Aug 20 Holiday	Aug 21
W19	Aug 22	Aug 23 Commencement of theory exams	Aug 24	Aug 25	Aug 26	Aug 27	Aug 28
W20	Aug 29	Aug 30	Aug 31	Sep 01	Sep 02	Sep 03	Sep 04
W21	Sep 05	Sep 06	Sep 07	Sep 08	Sep 09 End of Theory Exam	Sep 10	Sep 11
W22	Sep 12	Sep 13 Commencement of ODD SEM					

DEAN (Academics) 19.04.2021

VICE PRINCIPAL 19/04/2021

PRINCIPAL 19/04/2021

Dr. T. Thimmaiah Institute of Technology
Oorgaum, K.G.F- 563120

PRINCPAL 20/04/2021

Dr.T.Thimmaiah Institute of Technology
Oorgaum Post, K.G.F-563120
(Approved by AICTE,New Delhi, Affiliated to VTU-Belagavi,
Approved by Govt. of Karnataka and ISO 21001-2018 Certified)

F-No. : 005C

Date: 19.04.2021

DEPARTMENT OF MINING ENGINEERING

ACADEMIC CALENDER FOR EVEN SEMESTER

WEEK	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
W01	April-18	April-19 Commencement of Even Sem	April-20	April-21	April-22	April-23 Technical Seminar Topic Submission	April-24
W02	April-25	April-26 Technical Seminar Abstract Submission & Approval	April-27	April-28	April-29	April-30	May-01 Holiday
W03	May-02	May-03 Internship Review	May-04 Internship Review	May-05	May-06	May-07 Submission of Technical Seminar Complete Draft Report	May-08
W04	May-09	May-10 Phase II Ist Review	May-11	May-12 Internship Bound Report Submission	May-13	May-14 Holiday	May-15
W05	May-16	May-17 Ist Test VIII	May-18 Ist Test VIII	May-19	May-20 Start of Technical Seminar Presentation	May-21	May-22
W06	May-23	May-24 Ist Test IV & VI	May-25 Ist Test IV & VI	May-26 Ist Test IV & VI	May-27 Ist Test IV & VI	May-28 Ist Test IV & VI	May-29 Ist Test IV & VI
W07	May-30	May-31	June-01	June-02	June-03	June-04	June-05
W08	June-06	June-07	June-08	June-09	June-10	June-11	June-12
W09	June-13	June-14	June-15	June-16	June-17 2nd Test VIII	June-18 2nd Test VIII	June-19
W10	June-20	June-21	June-22	June-23	June-24	June-25 2nd Test IV & VI	June-26 2nd Test IV & VI
W11	June-27 2nd Test IV & VI	June-28 2nd Test IV & VI Phase II 2nd Review	June-29 2nd Test IV & VI	June-30 2nd Test IV & VI	July-01 2nd Test IV & VI	July-02 2nd Test IV & VI	July-03 2nd Test I & VI
W12	July-04	July-05 Internal Project Viva	July-06 Internal Project Viva	July-07	July-08	July-09	July-10
W13	July-11	July-12	July-13	July-14	July-15 3rd Test VIII	July-16 3rd Test VIII	July-17
W14	July-18	July-19 International Conference	July-20 Last Working Day VIII Sem & International Conference	July-21 Holiday	July-22	July-23	July-24
W15	July-25	July-26 Commencement of Theroy Exms	July-27	July-28	July-29	July-30	July-31
W16	Aug-01	Aug-02 Project Expo	Aug-03	Aug-04	Aug-05	Aug-06 End of Theory Exams	Aug-07 Commencement Internship & Project viva
W17	Aug-08	Aug-09 3rd Test IV & VI	Aug-10 3rd Test IV & VI	Aug-11 3rd Test IV & VI	Aug-12 End of Internship & Project viva	Aug-13	Aug-14
W18	Aug-15	Aug-16	Aug-17	Aug-18	Aug-19	Aug-20 Holiday	Aug-21
W19	Aug-22	Aug-23	Aug-24	Aug-25	Aug-26	Aug-27	Aug-28
W20	Aug-29	Aug-30	Aug-31	Sept-01	Sept-02	Sept-03	Sept-04
W21	Sept-05	Sept-06	Sept-07	Sept-08	Sept-09	Sept-10 Holiday	Sept-11
W22	Sept-12	Sept-13	Sept-14	Sept-15	Sept-16	Sept-17	Sept-18
W23	Sept-19	Sept-20	Sept-21	Sept-22	Sept-23	Sept-24	Sept-25
W24	Sept-26	Sept-27	Sept-28	Sept-29	Sept-30	Oct. 01 Commencement of ODD SEM	

18/04/2021

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Oorgaum, K. G. F-563120

Dr. T. Thimmaiah Institute of Technology

Oorgaum, KGF - 563120

(Affiliated to VTU - Belagavi, Approved by AICTE - New Delhi, Approved by Government of Karnataka)

F No.: Dr TTIT/IQAC/2020-21/006A

Department of Mining Engineering

Subject Preference for the Academic Year 2020-2021, ~~ODD/~~ EVEN Semester

Name of the faculty member: Paul Prasanna Kumar **Date: 22.03.2021**

Preferred Theory and LAB Subjects list by Faculty

Sl.No	Semester	Subject	Core/Elective	LAB
1	IV	Mining Machinery	Core	
2	VI	Surface Mine Planning & Design	Core	
3	VI	Mineral Processing & Fuel Technology	Core	
4	VI	Mineral Processing Lab		Lab
5	VIII	Computer Application in Mining	Core	
6	VIII	Project Phase-II	Core	

Subject Alloted

Sl.No	Semester	Subject	Core/Elective	LAB
1	VI	Mineral Processing & Fuel Technology	Core	
2	VI	Mineral Processing Lab		Lab
3	VIII	Computer Application in Mining	Core	
4	VIII	Project Phase-II	Core	

16/4/2021

Signature of Faculty Member

Signature of HOD

HOD
DEPARTMENT OF
MINING ENGINEERING
Dr. T. THIMMAIAH INSTITUTE
OF TECHNOLOGY
OORGAUM, KGF- 563 120

18/01/2022

PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K. G. F- 563120

Dr.T.THIMMAIAH INSTITUTE OF TECHNOLOGY
Oorgaum, Kolar Gold Fields, Karnataka – 563120
(Affiliated to VTU, Belgaum, Approved by AICTE - New Delhi)

F.No:DrTTIT/IQAC/2020-21/001A

Department of Mining Engineering

Result historyof Courses for 4 years

Semester: VI **Academic Year:** 2020-21

Course: MINERAL PROCESSING & FUEL TECHNOLOGY **Course Code:** 18MN63

Course Instructor Name: PAUL PRASANNA KUMAR

Exam Year	Faculty Incharge	No. of Students Appeared	No. of students Passed	Percentage
2016-17	PAUL PRASANNA KUMAR	42	38	88.09%
2017-18	Rockstoney	48	39	81.25 %
2018-19	Dr Subaranjan Paul	56	56	100 %
2019-20	Dr Subaranjan Paul	54	54	100 %

25/4/2021
Course Instructor

HOD

HOD
DEPARTMENT OF
MINING ENGINEERING
Dr. T. THIMMAIAH INSTITUTE
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OORGAUM, KGF- 563 120

17/01/2022
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(Estd. 1986) Oorgaum, Kolar Gold Fields, Karnataka – 563120
(Affiliated to VTU, Belgaum, Approved by AICTE - New Delhi)

F.No-DrTTIT/IQAC/2020-21/002AP

Department of Mining Engineering

Academic Year, Even Sem 2020 - 2021

Students Name List

Sem: VI **Date:19.04.2021**

Sl.No	USN	Name of the Student
	1GV16MI041	MAHESH
1	1GV17MI025	SUDHAKAR S
2	1GV17MI030	YASHKUMAR
3	1GV17MI031	YUVARAJ
4	1GV18MI003	ASHFAQ P
5	1GV18MI005	AVINASH
6	1GV18MI007	BADRINATH B
7	1GV18MI010	ISHAPPA
8	1GV18MI011	KARTHIK P
9	1GV18MI012	KIRAN KUMAR EMMI S
10	1GV18MI013	KIRAN NADAGOUDA
11	1GV18MI014	KUMAR MARUTHI S
12	1GV18MI016	M DEVENDRA NAIDU
13	1GV18MI017	MANOJ RANAVATH J
14	1GV18MI019	MRUTHUNJAY KUMAR S B
15	1GV18MI021	NITHIN M S
16	1GV18MI023	PRABHU P
17	1GV18MI024	PRADEEP V
18	1GV18MI026	PUNEETH NJ
19	1GV18MI027	PURUSHOTHAMAN V
20	1GV18MI028	RAGHUVARAN MS
21	1GV18MI031	SASIKUMAR R
22	1GV18MI033	SUDHAKAR K S
23	1GV18MI035	THIRUNAVUKKARASU M
24	1GV18MI037	VIGNESH S
26	1GV19MI400	ANEES A
27	1GV19MI401	ARVIND KUMAR V
28	1GV19MI402	ASHLEY JOHN PAUL A
29	1GV19MI403	BASAVARAJ
30	1GV19MI404	BOYA VINAY
31	1GV19MI405	HARIKIRAN M
32	1GV19MI407	JASPER P
33	1GV19MI408	MICAH JOHN SIMEON J
34	1GV19MI409	MITHUN RAHUL B
35	1GV19MI410	MOHAN
36	1GV19MI411	SALEEM A
37	1GV19MI413	SHOHEB M
38	1GV19MI414	SHREYAS KAMMALA
39	1GV19MI415	SIDDAROODHA BATAKURKI

10/01/2022
PRINCIPAL
Dr.T. Thimmaiah Institute of Technology
Oorgaum, K.G.F-563120

Class Coordinator

HOD

HOD
DEPARTMENT OF
MINING ENGINEERING
Dr. T. THIMMAIAH INSTITUTE
OF TECHNOLOGY
ORGAUM, KGF. 563 120

Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

(Estd. 1986) Oorgaum, Kolar Gold Fields, Karnataka - 0

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F.No:DrTTIT/IQAC/2020-21/007AL

w.e.f. 19/04/2021

Department of Mining Engineering

Academic Year 2020-21

Class Time Table

Semester: IV **Room No: MI 301**

DAY	9:00-9:55	9:55-10:50	10:50- 11.05	11:05-12:00	12:00-12:55	12.55-1.45	1:45-2:40	2:40-3:35	3:35- 4:45
MON (Offline)	MS-II (RS)	MM (MA)	Break	UMM (JG)	MAT-IV (SR)	Lunch Break	DIPMAT / MS-II LAB - B1 / GME LAB - B2		
TUE (Online)	UMM (JG)	MM (MA)		TDFM (MJ)	UMM (T) (JG)		MAT-IV (SR)	DIPMAT (SRS)	Mentoring
WED (Online)	MS-II (RS)	MAT-IV (SR)		UMM (JG)	MM (MA)		MS-II LAB - B3 / GME LAB - B4		
THU (Offline)	MAT-IV (SR)	TDFM (MJ)		GME (RT)	CIP		MS-II LAB - B2 / GME LAB - B1		
FRI (Online)	GME (RT)	MS-II (RS)		TDFM (MJ)	UMM (T) (JG)		MS-II LAB - B4 / GME LAB - B3		
SAT (Online)	GME (RT)	MAT-IV (T) (SR)		GME (T) (RT)	TDFM (T) (MJ)		STUDENT TECHNICAL ACTIVITIES		

Class Coordinator : Mr. Raja S

Course Code	Course Name	Name of the Course Instructor	Initial	Signature
18MAT41	Complex Analysis, Probability and Statistical Methods	Ms. Sri Raksha	SR	
18MN42	Underground Metal Mining	Mr. John Gladious	JG	
18MN43	Mine Surveying-II	Mr. Raja S	RS	
18MN44	Mining Machinery	Dr. Manjunath A	MA	
18MN45	Geology for Mining Engineers	Ms. Rajeshwari	RT	
18MN46	Thermodynamics & Fluid Mechanics	Mr. Mahendran J	MJ	
18MNL47	Mine Surveying – II Laboratory	Mr. Raja S & Dr. Manjunath A	RS & MA	
18MNL48	Geology for Mining Engineers Laboratory	Ms. Rajeshwari	RT	
18CPC49	Constitution of India, Professional Ethics and Cyber Law			
18MATDIP41	Additional Mathematics - II	Ms. Shailaja S R	SRS	

Lab Batches				
	B1	1GV18MI009	TO	1GV19MI012
	B2	1GV19MI013	TO	1GV19MI032
	B3	1GV19MI033	TO	1GV20MI0401
	B4	1GV20MI402	TO	1GV20MI420

PRINCIPAL 17/01/2022
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K.G.F.-563120

Prepared by : Time Table Coordinator
Verified by : Class Coordinator
Approved by : HOD 19.4.2021

Dean 19.4.2021

Principal 28/04/2021

T. THIMMAIAH INSTITUTE OF TECHNOLOGY

(Estd. 1986) Oorgaum, Kolar Gold Fields, Karnataka 563120
(Affiliated to VTU, Belgaum, Approved by AICTE - New Delhi)

F.No:DrTTIT/IQAC/2020-21/007AL

w.e.f. 19/04/2021

Department of Mining Engineering

Academic Year 2020-21

Class Time Table

Semester: VI **Room No: MI 302**

DAY	9:00-9:55	9:55-10:50	10:50- 11.05	11:05-12:00	12:00-12:55	12.55-1.45	1:45-2:40	2:40-3:35	3:35- 4:45
MON (Online)	MPFT (PPK)	MEE (VRP)	Break	OPEN ELE. (BNS)	GC (RS)	Lunch Break	MINI PROJECT		
TUE (Offline)	GC (RS)	MPFT (PPK)		OPEN ELE. (BNS)	MEE (T) (VRP)		MP LAB - B2 / MEE LAB - B1		
WED (Online)	OPEN ELE. (BNS)	MPFT (PPK)		GC (RS)	MEE (T) (VRP)		MINI PROJECT		
THU (Online)	SMPD (VP)	MPFT (T) (PPK)		MEE (VRP)	GC (T) (RS)		MINI PROJECT		
FRI (Offline)	MEE (VRP)	SMPD (VP)		MPFT (T) (PPK)	GC (T) (RS)		MP LAB - B1 / MEE LAB - B2		
SAT (Online)	SMPD (VP)	SMPD (T) (VP)		OPEN ELE. (T) (BNS)	Mentoring		STUDENT TECHNICAL ACTIVITIES		

Class Coordinator : Mr. Vikram P

Course Code	Course Name	Name of the Course Instructor	Initial	Signature
18MN61	Ground Control	Mr. Raja S	RS	
18MN62	Mine Environmental Engineering	Mr. Vijayaraghavan P	VRP	
18MN63	Mineral Processing and Fuel Technology	Mr. Paul Prasanna Kumar S	PPK	
18MN642	Surface Mine Planning and Design	Mr. Vikram P	VP	
18ME65X	Open Elective –A	Mr. Balasubramaniam N S	BNS	
18MNL66	Mine Ventilation and Environmental Engineering Laboratory	Mr. Vijayaraghavan P & Mr. Vikram P	VRP & VP	
18MNL67	Mineral Processing Laboratory	Mr. Paul Prasanna Kumar S	PPK	
18MNP68	Mini-project			

Lab Batches				
	B1	1GV16MI041	TO	1GV18MI026
	B2	1GV18MI027	TO	1GV19MI415

10/04/2021
PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K. G. F - 563120

Prepared by : Time Table Coordinator
Verified by : Class Coordinator
Approved by : HOD 16.04.2021

Dean 19.4.2021

20/04/2021
Principal

F.No:DrTTIT/IQAC/2020-21/007AL

w.e.f. 19/04/2021

Department of Mining Engineering

Academic Year 2020-21

Class Time Table

Semester: VI (2017 Scheme) **Room No: MI 302**

DAY	9:00-9:55	9:55-10:50	10:50- 11.05	11:05-12:00	12:00-12:55	12.55-1.45	1:45-2:40	2:40-3:35	3:35- 4:45
MON (Online)	SM (VP)	MD&R (VRP)	Break	UMM (JG)	M MGT (MM)	Lunch Break			
TUE (Offline)	UMM (JG)	SM (VP)		M MGT (MM)	RM (MA)		RM LAB - B1		
WED (Online)	RM (MA)	T Engg (VRP)		UMM (JG)	MD&R (T) (VRP)		SM (VP)	M MGT (MM)	SM (VP)
THU (Online)	T Engg (VRP)	RM (MA)		MD&R (VRP)	RM (MA)		STUDENT TECHNICAL ACTIVITIES		
FRI (Offline)	MD&R (VRP)	M MGT (MM)		T Engg (VRP)	UMM (JG)		ME&V LAB - B1		
SAT (Online)	TECHNICAL ACTIVITIES			TECHNICAL ACTIVITIES					
Class Coordinator :			Mr. Vikram P						

Course Code	Course Name	Name of the Course Instructor	Initial	Signature
17MN61	Mine Management	Dr. Manas Mukhopadhyay	MM	
17MN62	Surface Mining	Mr. Vikram P	VP	
17MN63	Underground Metal Mining	Mr. John Gladious	JG	
17MN64	Rock Mechanics	Mr. Manjunath A	MA	
17MN651	Mine Disasters and Rescue	Mr. Vijayaraghavan P	VRP	
17MN661	Tunneling Engineering	Mr. Vijayaraghavan P	VRP	
17MNL67	Rock Mechanics Lab	Mr. Vikram P	VP	
17MNL68	Mine Environment and Ventilation Lab	Mr. Vijayaraghavan P	VRP	

Lab Batches	B1	1GV16MI001	TO	1GV15MI062

17/01/2022
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Oorgaum, K. G. F. - 563120

Prepared by : Time Table Coordinator
Verified by : Class Coordinator
Approved by : HOD 16.4.2021

Dean 19.4.2021

28/04/2021
Principal

T. THIMMAIAH INSTITUTE OF TECHNOLOGY

(Estd. 1986) Oorgaum, Kolar Gold Fields, Karnataka - 563120
(Affiliated to VTU, Belgaum, Approved by AICTE - New Delhi)

F.No:DrTTIT/IQAC/2020-21/007AL

w.e.f. 19/04/2021

Department of Mining Engineering

Academic Year 2020-21

Class Time Table

Semester: VIII **Room No: MI 303**

DAY	9:00-9:55	9:55-10:50	10:50- 11.05	11:05-12:00	12:00-12:55	12.55-1.45	1:45-2:40	2:40-3:35	3:35- 4:45
MON (Online)	PROJECT WORK		Break	PROJECT WORK		Lunch Break	INTERNSHIP WORK		
TUE (Online)	PROJECT WORK			PROJECT WORK			INTERNSHIP WORK		
WED (Offline)	ML (JG)	MGS / EIM (MM/MA)		CAM (HLJ)	CAM (PPK)		TECHNICAL SEMINAR		
THU (Online)	MGS / EIM	ML (JG)		CAM (HLJ)	ML (JG)		CAM (PPK)	TECHNICAL SEMINAR	
FRI (Online)	CAM (PPK)	ML (JG)		MGS / EIM (MM/MA)	MGS / EIM (T) (MM/MA)		ML (JG)	TECHNICAL SEMINAR	
SAT (Offline)	PROJECT WORK			PROJECT WORK			STUDENT TECHNICAL ACTIVITIES		
Class Coordinator :			**Mr. Mahendran J**						

Course Code	Course Name	Name of the Course Instructor	Initial	Signature
17MN81	Mine Legislation	Mr. John Gladious	JG	
17MN82	Computer Application in Mining	Mr. Paul Prasanna Kumar S & Ms Hamsalatha J	PPK	
17MN831	Mining Geo-statistics	Dr. Manas Mukhopadhyay	MM	
17MN834	Environmental Impacts Of Mining	Dr. Manjunath A	MA	
17MN84	Internship/Professional Practice			
17MNP85	Project Work			
17MNS86	Seminar on current trends in Engineering and Technology			

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Prepared by : Time Table Coordinator
Verified by : Class Coordinator
Approved by : HOD 16.4.2021

Dean 19.4.2021

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F.No:DrTTIT/IQAC/2020-21/007AL

Online class w.e.f. 21/04/2021

Department of Mining Engineering

Academic Year 2020-21

Class Time Table

Semester: VIII (2015 SCHEME)

DAY	9:00-9:55	9:55-10:50	10:50- 11.05	11:05-12:00	12:00-12:55	12.55-1.45	1:45-2:40	2:40-3:35	3:35- 4:45
MON	PROJECT WORK		Break	PROJECT WORK		Lunch Break	INTERNSHIP WORK		
TUE	PROJECT WORK			PROJECT WORK			INTERNSHIP WORK		
WED	ML (JG)	EIM (MA)		M Mgt (MM)	M Mgt (MM)		TECHNICAL SEMINAR		
THU	EIM (MA)	ML (JG)		M Mgt (MM)	ML (JG)		TECHNICAL SEMINAR		
FRI	M Mgt (MM)	ML (JG)		EIM (MA)	EIM (T) (MA)		ML (JG)	TECHNICAL SEMINAR	
SAT	PROJECT WORK			PROJECT WORK			STUDENT TECHNICAL ACTIVITIES		
Class Coordinator :			Mr. Mahendran J						

Course Code	Course Name	Name of the Course Instructor	Initial	Signature
15MN81	Mine Legislation	Mr. John Gladious	JG	
15MN82	Mine Management	Dr. Manas Mukhopadhyay	MM	
15MN831	Environmental Impacts Of Mining	Dr. Manjunath A	MA	
15MN84	Internship/Professional Practice		T - TUITORIAL	
15MNP85	Project Work			
15MNS86	Seminar on current trends in Engineering			

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Prepared by : Time Table Coordinator 19.4.21
Verified by : Class Coordinator

Approved by : HOD 19.4.2021

Dean 19-4-2021

Principal 19/04/2021

Dr. T. Thimmaiah Institute of Technology

Oorgaum, KGF - 563120

(Affiliated to VTU - Belagavi, Approved by AICTE - New Delhi, Approved by Government of Karnataka)

F - No. : 007B

Date : 19.04.2021

Department of Mining Engineering

Individual Time Table

Semester: VI

Faculty Name: Paul Prasanna Kumar

DAY	9:00-9:55	9:55-10:50	10:50- 11.05	11:05-12:00	12:00-12:55	12.55-1.45	1:45-2:40	2:40-3:35	3:35- 4:45
MON (Online)	MPFT [PPK]		BREAK			LUNCH BREAK			
TUE (Offline)		MPFT [PPK]					MP LAB - B2		
WED (Online)		MPFT [PPK]							
THU (Online)		MPFT (T) [PPK]							
FRI (Offline)				MPFT (T) [PPK]			MP LAB - B1		
SAT (Online)									
		Lab Batches	B1	1GV16M8041 to 1GV18M8026					
			B2	1GV18M8027 to 1GV19M8415					

Signature of Time Table Coordinator 18/4/21

Signature of the HOD 19.4.2021

HOD
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19/01/2022

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B. E. MINING ENGINEERING
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)
SEMESTER - VI

MINERAL PROCESSING & FUEL TECHNOLOGY

Course Code	**18MN63**	CIE Marks	40
Teaching Hours/Week (L:T:P)	(3:2:0)	SEE Marks	60
Credits	04	Exam Hours	03

Course objectives:

- To review all unit operations in mineral processing and fuel technology.
- To understand the importance and principles of materials handling in the mineral processing plant.
- To explain the methods of analysis of comminution theory, selection criteria for crushing, grinding and screening equipment, selection principles for mineral concentration techniques, criteria for mineral concentration equipment selection.

Module-1

Introduction: Scope, objectives and limitations of mineral processing; Liberation and beneficiation characteristics of minerals and coal. Laboratory sampling.
Comminution: Theory and practice of crushing and grinding; Different types of crushing and grinding equipment - their application and limitations.

Module-2

Size separation: Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems.

Module-3

Gravity concentration methods: Jigging, heavy media separation, flowing film concentration - theory, application and limitations.

Froth flotation: Physico-chemical principles; Reagents; Machines; Flotation of sulphides, oxides and coal.

Electrical and magnetic methods of concentration: Principles, fields of application and limitations.

Module-4

Float and sink test: procedure for float and sink test, construction of washability curves and their use/application

Dewatering: Principles and techniques: thickening, filtration, and drying techniques.

Simplified processing/ beneficiation flow sheets: coal, copper, lead, zinc, gold, iron, manganese ores and lime stone.

Module-5

Solid fuels: Wood, peat, lignite, coal, anthracite; proximate and ultimate analyses; coal characteristics for different industrial uses; characteristics of Indian coals; caking and coking properties; Liquid fuels: Petroleum - its products and testing methods. Geseous fuels: Natural gas, producer gas and water gas.
Combustion of Coal: Mechanism of coal combustion, combustion systems (combustion stoichiometry), carbonization of coal: Low temperature carbonization, high temperature carbonization.

Course outcomes: At the end of the course the student will be able to:

- Ability to understand the importance and principles of materials handling in the mineral processing plant.
- Ability to explain the methods of analysis of comminution theories, selection criteria for crushing, grinding and screening equipment, selection principles for mineral concentration techniques, criteria for mineral concentration equipment selection.

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DR. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

Kolar

COURSE BOOK

Period of the Semester: **From** 19 Apr 2021 **To** 9 Nov 2021

Dept-Sem-Sec: MI-6-A

Subject with Code: MINERAL PROCESSING & FUEL TECHNOLOGY 18MN63

Time Slot			
MON:	09:00 - 09:55	**TUE:**	09:55 - 10:50
WED:	09:55 - 10:50	**THU:**	09:55 - 10:50
FRI :	11:05 - 12:00	**SAT:**	

Name of the Teacher: Mr Paul Prasanna Kumar

19/01/2022

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TTIT	Lesson Plan & Execution	

Name of the Faculty	***Mr Paul Prasanna Kumar***
Dept-Sem-Sec:	***MI-6-A***
Date of Commencement	***19 Apr 2021***
Last working day of Semester	***9 Nov 2021***

Source Material List	
1	Mineral Processing Technology, B.A.Wills, Pergamon Press. 5th Edition,
2	Ore Processing S.K.Jain, Oxford IBH, 2nd Edition, 1990
1	Fuels and Combustion, Dr. Samir Sarkar, Published by Orient Longman Ltd., 1990.
2	Principles of Mineral Dressing, A.K. Gaudin, TMH Edition, Tata Mc. Graw Hill, 1971.

Course Outcome List	
1	Interpret the scope, objectives, limitations and sampling procedures adopted in mines
2	Suggests suitable equipment for crushing and grinding of minerals in mines
3	Apply the principles of sizing, screens and classifiers in mining industry
4	Compare different concentration methods, dewatering techniques and its application in processing plant
5	Distinguish the concepts of float & sink test during processing of minerals
6	Classify different solid fuels, combustion of coal and its uses in mining industry

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Subject Name				MINERAL PROCESSING & FUEL TECHNOLOGY		
Period	Planned			Execution		
	Date	Topic	Source material to be referred	Date	Topic	Source material to be referred
Module 1						
1	19 Apr 2021	Scope	TEXT 1	19 Apr 2021	Introduction to Mineral Pocessing, Scope of Mineral Processing	TEXT 1
2	20 Apr 2021	Scope	TEXT 1	20 Apr 2021	Objectives limitations advantages & disadvantages of mineral processing	TEXT 1
3	21 Apr 2021	objectives and limitations of mineral processing; Liberation and beneficiation characteristics of minerals and coal	TEXT 1	21 Apr 2021	Sampling techniques Liberation & its concepts	TEXT 1
4	22 Apr 2021	objectives and limitations of mineral processing; Liberation and beneficiation characteristics of minerals and coal	TEXT 1	22 Apr 2021	Comminution and its principles	TEXT 1
5	23 Apr 2021	Laboratory sampling	TEXT 1	23 Apr 2021	Theories and stages of comminutions	TEXT 1
6	26 Apr 2021	Theory and practice of crushing and grinding; Different types of crushing and grinding equipment - their application and limitations	TEXT 1	26 Apr 2021	Grinding & its concepts	TEXT 1
7	27 Apr 2021	Theory and practice of crushing and grinding; Different types of crushing and grinding equipment - their application and limitations	TEXT 1	27 Apr 2021	Jaw Crusher, Gyratory Crusher	TEXT 1
8	28 Apr 2021	Theory and practice of crushing and grinding; Different types of crushing and grinding equipment - their application and limitations	TEXT 1	28 Apr 2021	Roll crusher & Cone crusher	TEXT 1
Period	Planned			Execution		
	Date	Topic	Source material to be referred	Date	Topic	Source material to be referred

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9	29 Apr 2021	Theory and practice of crushing and grinding; Different types of crushing and grinding equipment - their application and limitations	TEXT 1	29 Apr 2021	Ball Mill, Rod Mill	TEXT 1
10	30 Apr 2021	Theory and practice of crushing and grinding; Different types of crushing and grinding equipment - their application and limitations	TEXT 1	30 Apr 2021	Autogeneous Mill	TEXT 1
Module 2						
11	3 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	3 May 2021	Laboratory size analysis and interpretation	TEXT 1
12	4 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	4 May 2021	Settling of solids in fluids	TEXT 1
13	5 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	5 May 2021	Industrial Screen- Manual Screen	TEXT 1
Period	***Planned***			***Execution***		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
14	6 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	6 May 2021	Industrail Screen-Automatic & Mechanical	TEXT 1
15	7 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	7 May 2021	Mechanical Classifier & Its Principles	TEXT 1

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16	10 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	10 May 2021	Centifugal Classifier	TEXT 1
17	11 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	11 May 2021	Hydraulic Classifier	TEXT 1
18	12 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	12 May 2021	Hydro-cyclones	TEXT 1
Period	***Planned***			***Execution***		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
19	13 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	13 May 2021	Differential Settlings	TEXT 1
20	17 May 2021	Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro-cyclones: Numerical problems	TEXT 1	17 May 2021	Theory of particle settling in fluids	TEXT 1
Module 3						
21	21 May 2021	Flowing Film Concentrations	TEXT 1	21 May 2021	Flowing Film Concentrations	TEXT 1
22	27 May 2021	Jigging	TEXT 1	18 May 2021	Introduction to Gravity Concentration Methods-Jigging	TEXT 1
23	28 May 2021	heavy media separation	TEXT 1	19 May 2021	Wilfley Table-Shaking Table	TEXT 1
24	31 May 2021	flowing film concentration - theory	TEXT 1	20 May 2021	flowing film concentration - theory	TEXT 1
25	1 Jun 2021	application and limitations	TEXT 1	1 Jun 2021	heavy media separation	TEXT 1
26	2 Jun 2021	Physico-chemical principles; Reagents; Machines; Flotation of sulphides	TEXT 1	2 Jun 2021	Introduction to Flotation	TEXT 1

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27	3 Jun 2021	Physico-chemical principles; Reagents; Machines; Flotation of sulphides	TEXT 1	3 Jun 2021	Physico-chemical principles of Flotation & flotation machines	TEXT 1
28	4 Jun 2021	oxides and coal	TEXT 1	4 Jun 2021	Flotation Reagents, Flotation of sulphide ores	TEXT 1
29	7 Jun 2021	Principles	TEXT 1	7 Jun 2021	Electrical method of concentration	TEXT 1
30	8 Jun 2021	Principles	TEXT 1	8 Jun 2021	mechanical methods of concentration	TEXT 1
31	9 Jun 2021	fields of application and limitations	TEXT 1	9 Jun 2021	fields of application and limitations	TEXT 1
Module 4						
32	18 Jun 2021	filtration	TEXT 1	18 Jun 2021	filtration	TEXT 1
33	24 Jun 2021	and drying techniques	TEXT 1	24 Jun 2021	and drying techniques	TEXT 1
Period	***Planned***			***Execution***		
	Date	***Topic***	***Source material to be referred***	***Date***	***Topic***	***Source material to be referred***
34	25 Jun 2021	coal	TEXT 1	25 Jun 2021	coal	TEXT 1
35	1 Jul 2021	procedure for float and sink test	REF 1	10 Jun 2021	procedure for float and sink test	REF 1
36	2 Jul 2021	procedure for float and sink test	REF 1	11 Jun 2021	procedure for sink test	REF 1
37	5 Jul 2021	construction of washability curves and their use/application	REF 1	14 Jun 2021	construction of washability curves and their use/application	REF 1
38	6 Jul 2021	construction of washability curves and their use/application	REF 1	15 Jun 2021	construction of washability curves and their use/application	REF 1
39	7 Jul 2021	Principles and techniques: thickening	TEXT 1	16 Jun 2021	Principles and techniques: thickening	TEXT 1
40	8 Jul 2021	filtration	TEXT 1	17 Jun 2021	filtration	TEXT 1
41	9 Jul 2021	and drying techniques	TEXT 1	21 Jun 2021	and drying techniques	TEXT 1
42	12 Jul 2021	coal, copper, lead	TEXT 1	23 Jun 2021	coal	TEXT 1
43	13 Jul 2021	zinc, gold	TEXT 1	7 Jul 2021	copper	TEXT 1
44	14 Jul 2021	iron, manganese ores and lime stone	TEXT 1	9 Jul 2021	lead	TEXT 1
45	15 Jul 2021	manganese ores and lime stone	TEXT 1	15 Jul 2021	manganese ores and lime stone	TEXT 1
46	16 Jul 2021	zinc	TEXT 1	16 Jul 2021	zinc	TEXT 1
Module 5						
47	19 Jul 2021	Wood, peat	TEXT 1	13 Jul 2021	zinc, gold	TEXT 1
48	20 Jul 2021	lignite, coal	TEXT 1	15 Jul 2021	lignite	TEXT 1

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49	21 Jul 2021	anthracite; proximate and ultimate analyses; coal characteristics for different industrial uses; characteristics of Indian coals; caking and coking properties; Liquid fuels: Petroleum - its products and testing methods	REF 1	22 Jul 2021	Wood, peat	REF 1

Period	Planned			Execution		
	Date	Topic	Source material to be referred	Date	Topic	Source material to be referred
50	22 Jul 2021	Geseous fuels: Natural gas	REF 1	23 Jul 2021	Geseous fuels: Natural gas	REF 1
51	23 Jul 2021	producer gas and water gas	REF 1	9 Aug 2021	producer gas and water gas	REF 1
52	26 Jul 2021	Mechanism of coal combustion	REF 1	10 Aug 2021	Mechanism of coal combustion	REF 1
53	27 Jul 2021	Mechanism of coal combustion	REF 1	11 Aug 2021	Mechanism of coal combustion	REF 1
54	28 Jul 2021	combustion systems (combustion stoichiometry)	REF 1	12 Aug 2021	combustion systems (combustion stoichiometry)	REF 1
55	2 Aug 2021	carbonization of coal: Low temperature carbonization	REF 1	13 Aug 2021	carbonization of coal: Low temperature carbonization	REF 1
56	3 Aug 2021	high temperature carbonization	REF 1	14 Aug 2021	high temperature carbonization	REF 1

Module No.	# of Classes Planned(till date)	Planned Effort(till date)	# of Classes Executed(till date)	Actual Effort (till date)	% Coverage
1	10	9hrs 10min	10	9hrs 10min	100.0
2	10	9hrs 10min	10	9hrs 10min	100.0
3	11	10hrs 5min	11	10hrs 5min	100.0
4	17	15hrs 35min	17	15hrs 35min	100.0
5	8	7hrs 20min	8	7hrs 20min	100.0

20/8/2021
Faculty in charge

20.8.2021
HOD's Signature

HOD
DEPARTMENT OF
MINING ENGINEERING
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OORGAUM, KGF- 563 120

20/8/2021
Signature of Principal (&remark if any)

10/08/2021
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Dr T THIMMAIAH INSTITUTE OF TECHNOLOGY

DEPARTMENT OF MINING ENGINEERING

Subject: Mineral Processing & Fuel Technology **Subject Code: 18MN63**

Faculty Name: Paul Prasanna Kumar **Sem: VI**

QUESTION BANK

MODULE-I

1. Explain the objectives and scopes of mineral processing. (08 Marks)
2. Explain Comminution and its stages. (08 Marks)
3. With sketches, explain the principles of Comminution. (10 Marks)
4. With equations, explain the theories of Comminution. (06 Marks)
5. With neat sketch, explain the working principle of Blake Jaw Crusher. (08 Marks)
6. With neat sketch, explain the working principle of tumbling mill. (08 Marks)
7. Define Comminution, its objectives and principles. (08 Marks)
8. Write a note on objectives of mineral processing. (05 Marks)
9. Write a note on scope of mineral processing. (05 Marks)
10. What are the different types of mechanical sorting? Explain the type of sorter which is used to sort iron ore, with neat sketch. (10 Marks)
11. What are the different types of manual sampling? Explain each briefly. (12 Marks)
12. With neat sketch, explain Vezin sampler. (08 Marks)
13. Explain about theories of communication. State the different theories of comminution with their formula. (10 Marks)
14. Explain in detail about Jaw Crusher with a neat sketch. (10 Marks)
15. With a neat sketch, explain the working principle of ball mill. (10 Marks)
16. With neat sketch, explain the working principle of Blake Jaw Crusher. (08 Marks)
17. With neat sketch, explain the working principle of tumbling mill. (08 Marks)
18. Explain the working principle of Jaw crusher with neat sketch. (08 Marks)
19. Explain the working principle of Cone crusher with neat sketch. (08 Marks)
20. Define Crushing of ore and different types of crushing of ore. (08 Marks)
21. Write in detail on different gravity equipment used for mineral processing. (08 Marks)

MODULE-II

1. With neat sketch, explain the working of Trommel (or) Revolving screen. (08 Marks)
2. With a neat sketch, explain the working of Cyclone separator (or) hydrocyclone. (08 Marks)
3. Write notes on Settling of solids in fluids. (08 Marks)
4. Write notes on Mechanical classifiers. (08 Marks)
5. Write notes on Heavy media separation by cyclones. (08 Marks)
6. With a neat sketch, explain about the vibrating screen. (10 Marks)
7. With a neat sketch, explain about the working principle of spiral classifier. (10 Marks)
8. Discuss about the liberation and its concepts. (08 Marks)
9. Explain about the importance of sizing. (08 Marks)
10. Explain about the purpose and working principle of grizzly with neat sketch. (08 Marks)

MODULE-III

1. Classify flotation reagents. Explain them in detail. (08 Marks)
2. Write notes on the floatation of coal. (08 Marks)
3. Write notes on Reagent in froth flotation methods. (08 Marks)
4. Write notes on Electrical method of concentration, application and limitation. (08 Marks)
5. With a neat sketch, explain the working principle of jigging. (10 Marks)

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6. With a neat sketch, explain the principle of flowing film concentration. (10 Marks)
7. With a neat sketch, explain the concept of floatation. (10 Marks)
8. With a neat sketch, explain the working principle of Jigging. (08 Marks)
9. With a neat sketch, explain the working of shaking table. (08 Marks)
10. With neat sketch, explain the working principle of wilfly table. (08 Marks)

MODULE-IV

1. With graphs, explain the construction of washability curve. (08 Marks)
2. With a neat sketch, explain the working of thickener. (08 Marks)
3. With a neat sketch, explain the working of drying. (08 Marks)
4. Draw the general beneficiation flow chart of lime stone and explain the same. (08 Marks)
5. Write the Procedure for float & sink test. (08 Marks)
6. Write notes on washability curves uses and application. (08 Marks)
7. With a neat sketch, explain the working of continuous thickener. (10 Marks)
8. Draw the flow chart of iron ore and explain. (10 Marks)
9. Write a note on float and sink test with neat sketch. (10 Marks)
10. Explain use of float and sink test. Write a note on construction of washability curves. (10 Marks)
11. Write a note on interpretation of tramp curves near gravity material with a neat sketch. (10 Marks)
12. Define washability index of coal. Write a note on washability index of coal. (10 Marks)
13. With a neat sketch, explain the working of drying. (08 Marks)
14. Draw the general beneficiation flow chart of lime stone and explain the same. (08 Marks)

MODULE-V

1. Briefly explain about the characteristics of Indian coal. (08 Marks)
2. With neat sketch, explain the manufacture, reactions and uses of water gas. (08 Marks)
3. Explain in detail about the combustion stoichiometry. (08 Marks)
4. Explain low and high temperature carbonization. (08 Marks)
5. Explain the different types of fuels giving each fuel example. (08 Marks)
6. Write the caking and coking properties of coal. (08 Marks)
7. Explain the different sources of gas occurrence and uses. (08 Marks)
8. Write note on mechanism of coal combustion and mention on high temperature combustion. (08 Marks)
9. Define liquefaction. Write a note on gasification of solid fuels. (10 Marks)
10. Define fuel. Briefly explain classification of fuels with examples. (10 Marks)
11. Define coal. Write a note on classification of coal based on grade. (10 Marks)
12. Define the following: i) Calorific value of coal ii) Coking coal iii) Non-coking coal. iv) Calorific value of Anthracites, Bituminous, Lignite. (10 Marks)
13. Write a note on "LURGI-SPILL PROCESS" of carbonization of coal. (10 Marks)
14. Define combustion of coal. Briefly explain mechanism of coal combustion. (10 Marks)
15. Define crude oil. Write a note on classification of petroleum. (10 Marks)
16. Define natural gas. List out the different petroleum products. (10 Marks)
17. Discuss in detail about wood. (08 Marks)
18. Discuss in detail about lignite. (08 Marks)

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Oorgaum, K.G.F.

25/4/2021
Course Instructor

25.4.2021
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OF TECHNOLOGY
OORGAUM, KGF- 563 120

USN | | | | | | | | | | |

10MN62

Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Mineral Processing

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Write a note on objectives of mineral processing. (05 Marks)
b. Write a note on scope of mineral processing. (05 Marks)
c. What are the different types of mechanical sorting? Explain the type of sorter which is used to sort iron ore, with neat sketch. (10 Marks)

2 a. What are the different types of manual sampling? Explain each briefly. (12 Marks)
b. With neat sketch, explain Vezin sampler (08 Marks)

3 a. With neat sketches, explain in detail about the principles of communication. (10 Marks)
b. Explain about theories of communication. State the different theories of communication with their formula. (10 Marks)

4 a. Explain in detail about Jaw Crusher with a neat sketch. (10 Marks)
b. With a neat sketch, explain the working principle of ball mill. (10 Marks)

PART – B

5 a. With a neat sketch, explain about the vibrating screen. (10 Marks)
b. With a neat sketch, explain about the working principle of spiral classifier. (10 Marks)

6 a. With a neat sketch, explain the working principle of jigging. (10 Marks)
b. With a neat sketch, explain the principle of flowing film concentration. (10 Marks)

7 a. With a neat sketch, explain the concept of floatation. (10 Marks)
b. What are the flotation regents, explain them briefly. (10 Marks)

8 a. With a neat sketch, explain the working of continuous thickener. (10 Marks)
b. Draw the flow chart of iron ore and explain. (10 Marks)

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CBCS Scheme

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15MN62

Sixth Semester B.E. Degree Examination, June/July 2018
Mineral Processing and Fuel Technology

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing one full question from each module.*

Module-1

1 a. Explain the different types of Fuels giving each fuel example. (08 Marks)
b. Write the Caking and Coking properties of coal. (08 Marks)

OR

2 a. Explain the different sources of Gas occurrence and uses. (08 Marks)
b. Write notes on mechanism of coal combustion and mention on High Temperature combustion. (08 Marks)

Module-2

3 a. Write notes on Mineral Processing limitations and scope. (08 Marks)
b. Write notes on beneficiation of coal. (08 Marks)

OR

4 a. Define Communication. Object and principle. (08 Marks)
b. Write the different stages of communication. (08 Marks)

Module-3

5 a. Define Crushing of ore and different types of crushing of ore. (08 Marks)
b. Write in detail on different gravity equipments used for Mineral processing. (08 Marks)

OR

6 a. Write notes on Settling of solids in fluids. (08 Marks)
b. Write notes on Mechanical classifiers. (08 Marks)

Module-4

7 a. Write notes on Heavy media separation by cyclones. (08 Marks)
b. Write notes on the floatation of coal. (08 Marks)

OR

8 a. Write notes on Reagent in froth flotation methods. (08 Marks)
b. Write notes on Electrical method of Concentration , Application and Limitation. (08 Marks)

Module-5

9 a. Write the Procedure for float and sink test. (08 Marks)
b. Write notes on Washability curves uses and application. (08 Marks)

OR

10 a. Draw notes on flow sheet for copper ore treatment for extraction of copper. (08 Marks)
b. Write notes on Principle of the Thickening and its application. (08 Marks)

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CBCS SCHEME

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Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Mineral Processing and Fuel Technology

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Briefly explain about the characteristics of Indian coal. **(08 Marks)**
b. With neat sketch, explain the manufacture, reactions and uses of water gas. **(08 Marks)**

OR

2 a. Explain in detail about the combustion stoichiometry. **(08 Marks)**
b. Explain low and high temperature carbonization. **(08 Marks)**

Module-2

3 a. Explain the objectives and scopes of mineral processing. **(08 Marks)**
b. Explain Comminution and its stages. **(08 Marks)**

OR

4 a. With sketches, explain the principles of Comminution. **(10 Marks)**
b. With equations , explain the theories of Comminution. **(06 Marks)**

Module-3

5 a. With neat sketch, explain the working principle of Blake Jaw Crusher. **(08 Marks)**
b. With neat sketch, explain the working principle of Tumbling mill. **(08 Marks)**

OR

6 a. With neat sketch, explain the working of Trommel (or) Revolving screen. **(08 Marks)**
b. With a neat sketch, explain the working of Cyclone separator (or) hydrocyclone. **(08 Marks)**

Module-4

7 a. With a neat sketch, explain the working principle of Jigging. **(08 Marks)**
b. With a neat sketch, explain the working of shaking table. **(08 Marks)**

OR

8 a. Classify flotation reagents. Explain them in detail. **(08 Marks)**
b. With a neat sketch, explain the low intensity wet magnetic separator. **(08 Marks)**

Module-5

9 a. With graphs, explain the construction of washability curve. **(08 Marks)**
b. With a neat sketch, explain the working of thickner. **(08 Marks)**

OR

10 a. With a neat sketch, explain the working of drying. **(08 Marks)**
b. Draw the general beneficiation flow chart of lime stone and explain the same. **(08 Marks)**

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Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Mineral Processing

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

PART – A

1 a. Define Mineral Processing. Write the objectives and scope of Mineral Processing. (10 Marks)
b. Explain Radiometric Sorting. (10 Marks)

2 a. Define Sampling and write the objectives of sampling. (06 Marks)
b. Explain different types of manual sampling. (06 Marks)
c. Explain Mechanical sorting. (08 Marks)

3 a. Explain stages of communication. (10 Marks)
b. Explain Liberation and its concepts. (10 Marks)

4 a. What is the principles of crushing and write the difference between primary and secondary crushing. (06 Marks)
b. Explain Cone crusher. (08 Marks)
c. Explain Grinding by Ball Mill. (06 Marks)

PART – B

5 a. What are different types of Industrial screens? Explain any one. (06 Marks)
b. Explain Free settling and Hindered settling. (14 Marks)

6 a. What is the principles of Gravity concentration and explain jigging. (10 Marks)
b. Explain High Intensity Magnetic separator. (10 Marks)

7 a. Write the Physico – Chemical principle of flotation. (10 Marks)
b. Explain Floating Reagents and Floating Machines. (10 Marks)

8 a. Explain the principle and techniques in dewatering. (12 Marks)
b. Draw the flowchart for processing of copper ore and explain it. (08 Marks)

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CBCS SCHEME

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15MN62

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Mineral Processing and Fuel Technology

Time: 3 hrs. Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Write a detailed note on Peat. (08 Marks)
b. Write a detailed note on Petroleum. (08 Marks)

OR

2 a. Write a detailed note on low temperature carbonization. (08 Marks)
b. Write a detailed note on high temperature carbonization. (08 Marks)

Module-2

3 a. Discuss in detail about the objectives of mineral processing. (08 Marks)
b. Discuss in detail about the scope of mineral processing. (08 Marks)

OR

4 a. With neat sketch, explain the principles of communication. (12 Marks)
b. Discuss in detail about the objectives of communication. (04 Marks)

Module-3

5 a. With a neat sketch, explain the working principle of Gyratory crusher. (08 Marks)
b. With a neat sketch, explain the working principle of ball mill. (08 Marks)

OR

6 a. With neat sketch, explain the working principle of stationary grizzly. (08 Marks)
b. With neat sketch, explain the working principle of hydrocyclone. (08 Marks)

Module-4

7 a. With a neat sketch, explain the concept of hindered settling. (08 Marks)
b. With a neat sketch, explain the working principle of shaking table. (08 Marks)

OR

8 a. Discuss in detail about the flotation reagents. (08 Marks)
b. Discuss in detail about the magnetic method of concentration. (08 Marks)

Module-5

9 a. Discuss in detail about the washability of coal. (08 Marks)
b. With neat sketch, explain the working principle of thickening/sedimentation. (08 Marks)

OR

10 a. With a neat sketch, explain the working principle of filtration. (08 Marks)
b. Explain the beneficiation flow sheet of copper. (08 Marks)

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F.No-DrTTIT/IQAC/2020-21/059AP

Department of Mining Engineering

B.E. 6th Semester Ist Internal Assessment Test

Scheme : 2018 **Academic Year: 2020 - 21**

Course Name :Mineral Processing & Fuel Technology **Course Code : 18MN63**

Duration : 90 minutes **Max marks** : 50

Course Instructor : Paul Prasanna Kumar **Date** : 26.05.2021

Answer any one full Question from each part

Part-A (20 marks)

Q No	Question	Marks	CO	RBT
1a	Define Mineral Processing. Discuss the objectives of the same	10	CO1	1
1b	Discuss about the sequence of operation in Mineral Processing	10	CO1	2
2a	List the objectives and the stages of comminution.	10	CO2	1
2b	With neat sketches, explain the different mechanical sampling method	10	CO1	2

Part-B (20 marks)

Q No	Question	Marks	CO	RBT
3a	Discuss the various principles of comminution	10	CO2	2
3b	With neat sketch, discuss the working principle of rod mill	10	CO2	2
4a	With neat sketch, discuss the working principle of Jaw crusher	10	CO2	2
4b	With neat sketch, discuss the working principle of gyratory crusher	10	CO2	2

Part-C (10 marks)

Q No	Question	Marks	CO	RBT
5	Define the Following: a) Comminution b) Enrichment Ratio c) Reduction Ratio d) Critical Speed	4*2.5=10	CO2	1
6	State the different theories of comminution with their formulas	10	CO2	1

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Dr. T. THIMMAIAH INSTITUTE OF TECHNOLOGY

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(Estd. 1986) Oorgaum. Kolar Gold Fields. Karnataka – 563120
(Affiliated to VTU. Belgaum. Approved by AICTE - New Delhi)

F.No-DrTTIT/IQAC/2020-21/059BP

Department of Mining Engineering

B.E. VI Semester I[st] Internal Assessment Test

Scheme and Solution

Scheme : **2018** **Academic Year: 2020-21**

Course Name : **Mineral Processing & Fuel Technology** **Course Code: 18MN63**

Course Instructor : **Paul Prasanna Kumar** **Max marks : 50**

Date : 22/05/2021

Q.No.	Brief Solution	Marks
1a	It is commonly regarded as the processing of raw minerals to yield marketable products & waste by means that do not destroy the physical & chemical identity of the minerals. Therefore, mineral dressing is a process of mechanically separating the ore minerals from the gangue minerals. Objectives of mineral processing can be classified into 2 ways: 1) Technical objectives & 2) Economical objectives **GENERAL OBJECTIVES:** ➢ To remove the gangue/waste from the ore. ➢ To enhance the grade of the ore. ➢ Low grade ore can be mined by adopting selective mining method. ➢ To make maximum utility from available mineral deposit. ➢ To reduce the additional capital investment, maintenance cost in metallurgical plants due to gangue minerals.	2 2 6 10
1b	There are two fundamental operations in mineral processing (or) sequence of operation: **a) Liberation:** The release or liberation, of the valuable minerals from their waste gangue minerals is accomplished by comminution, which involves crushing, and, if necessary, grinding, to such a particle size that the product is a mixture of relatively clean particles of mineral and gangue. The figure below shows a lump of ore which has been reduced to a number of cubes of identical volume and of a size below that of the grains of mineral observed in the original ore sample. 	3 1
		1

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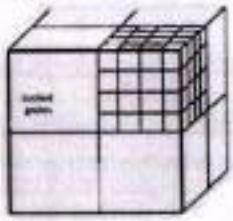
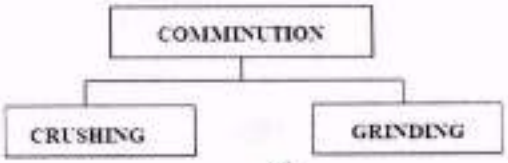
	Conventional optical microscopes can be used for the examination of thin and polished sections of mineral samples, and in mineral sands applications the simple binocular microscope is a practical tool. However, it is becoming increasingly common to utilize the new technologies of automated mineral analysis using scanning electron microscopy, such as the Mineral Liberation Analyzer and the QEMSCAN. **Liberation by size reduction** ➢ Consider a cubic (10 cm dia) of the ore having mineral and gangue. 	1
	➢ Suppose it has cubic grains of 10 mm ➢ Till the ore lump is crushed to 10 mm dia., all the grains are **Locked.** ➢ If the ore lump is crushed to particles of 5 mm dia, then, some grains are **Free** and some are **Locked.**	3
	Liberation by detachment If the ore lump is made of mineral grains bonded loosely, fracturing to the grain size results in complete liberation. Mostly liberation needs size reduction. Example: Pebble phosphate rock	1
	b) <u>Separation:</u> ➢ The second fundamental (main) operation in mineral processing, after the release, or liberation, of the valuable minerals from the gangue minerals, is the separation of these values from the gangue, i.e., concentration.	1 10
2a	**<u>Objectives of Comminution:</u>** ✓ Reduction of large lumps into smaller sizes. ✓ Production of solids of desired size ranges. ✓ Breaking apart valuable minerals from gangue (liberation of valuables). **<u>Stages of Comminution:</u>** 	2

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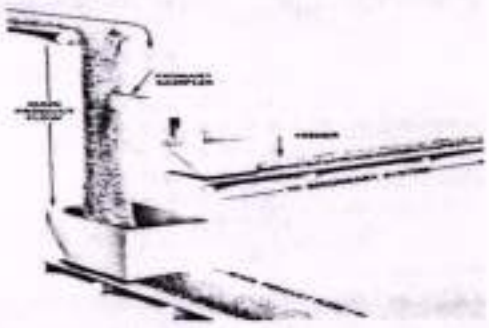
2

	Crushing: • Crushing is the first mechanical stage in the process of comminution, it is generally a dry operation and is usually performed in two or three stages. • Crushing and grinding are usually carried out in a sequence of operations by which the lump size is reduced step by step. There are 3 stages of crushing and 2 stages of grinding. i. Primary Crushing (coarse crushing): In primary crushing, ore or run-of-mine ore (up to 1 m in size) is crushed down to about 10 cm and it is done in a jaw or gyratory crusher. ii. Secondary Crushing (intermediate crushing): In this case, ore is crushed from 10 cm to less than 1 – 2 cm size; for this purpose, jaw, cone or roll crushers are used. These secondary crushers consume more power than primary crushers. iii. Tertiary Crushing (fine crushing): By tertiary crushers ore is crushed from 1 – 2 cm to less than 0.5 cm. Short head cone crushers, roll crushers, hammer mills can be used for this purpose. **Grinding:** ✓ Grinding is the final stage used in the comminution process, is usually conducted in cylindrical tumbling mills, stirred mills, or vibrating mills, where the particle size is reduced through a combination of impact and abrasion. ✓ The main types of tumbling mills are; ball mills, rod mills, autogenous (AG) mills, and semi-autogenous (SAG) mills.	4 4 10
2b	**MECHANICAL (or) AUTOMATIC SAMPLING**  ✓ All sampling systems require a primary sampling device or cutter, and a system to convey the collected material to a convenient location for crushing and further sample division. ✓ There are many different types of sample cutter; the Vezin type sampler is widely used to sample a falling ore stream. ✓ This consists of a revolving cutter in the shape of a circular sector of such dimensions as to cut the whole stream of ore, and divert the sample into a separate sample chute.	2 3 3

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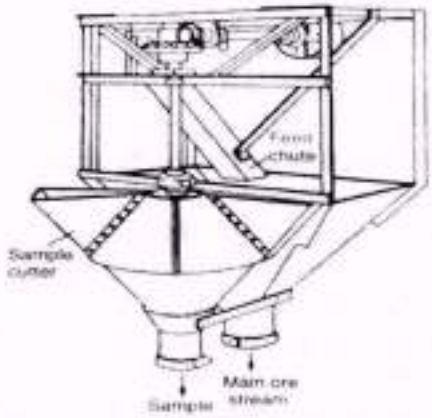
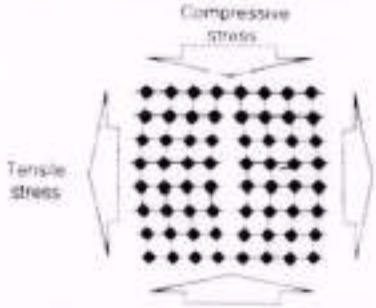
	Vezin Sampler:  ✓ The Vezin sampler consists of a revolving cutter in the shape of a circular sector of such dimensions to cut the whole stream of ore & divert the sample into a separate sample chute. ✓ The cutting sector must be atleast 3 – 4 times larger than the coarser particles. ✓ Vezin sampler are used to make a cut of 1/25 – 1/400 samples.	2 3 10
3a	**Principles of Comminution:** ✓ Most minerals are crystalline materials in which the atoms are regularly arranged in three-dimensional arrays. ✓ In the crystalline lattice of minerals, these inter-atomic bonds are effective only over small distances, and can be broken if extended by a tensile stress. Such stresses may be generated by tensile or compressive loading as shown in the figure below.  ***Strain of a crystal lattice resulting from tensile or compressive stresses*** ✓ Even when rocks are uniformly loaded, the internal stresses are not evenly distributed, as the rock consists of a variety of minerals dispersed as grains of various sizes. ✓ The distribution of stress depends upon the mechanical properties of the individual minerals, but more importantly upon the presence of cracks or flaws in the matrix, which act as sites for stress concentration as shown in the below figure.	2 1 2

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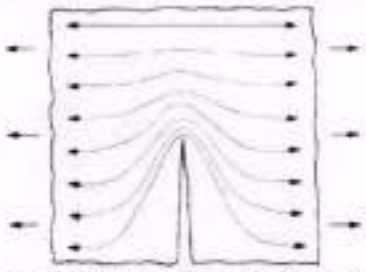
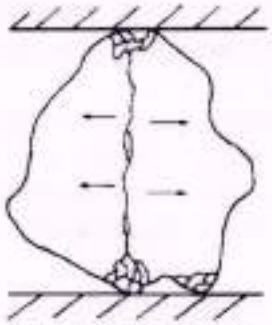


Stress concentration at a crack tip direction

1

- ✓ Therefore, there is a critical value for the crack length at any particular level of stress at which the increased stress level at the crack tip is sufficient to break the atomic bond at that point.
- ✓ When an irregular particle is broken by compression, or crushing, the products fall into two distinct size ranges-coarse particles resulting from the induced tensile failure, and fines from compressive failure near the points of loading, or by shear at projections as shown in the figure below.

3

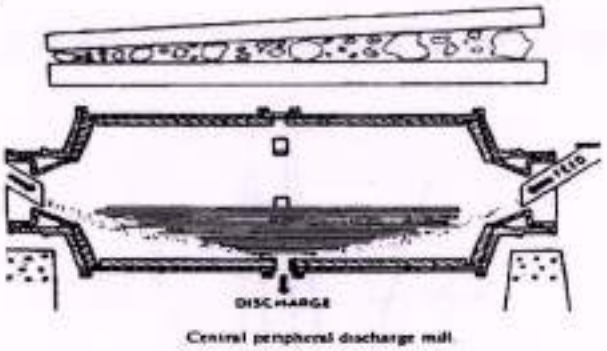


Fracture by crushing

1

10

3b **ROD MILL:**



Central peripheral discharge mill

3

- ✓ It is a tumbling mill having a rotating cylindrical shell.
- ✓ 75-100 mm dia steel rods are the grinding media.
- ✓ They are laid parallel to one another.
- ✓ Size reduction of the ore is by line of contact between rods.
- ✓ The rods are kept apart by coarse particles.

7

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5

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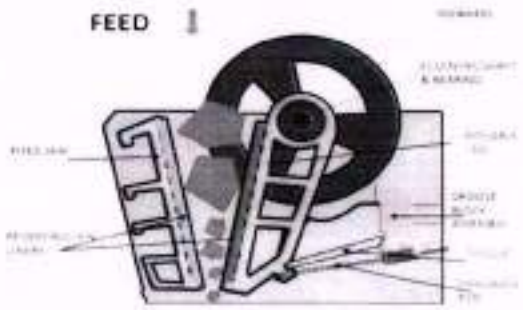
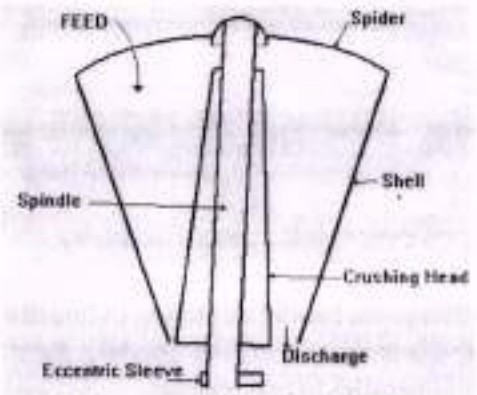
4a	**Jaw Crusher**  **Working Principle of Jaw Crusher:** ✓ A jaw crusher uses compressive force for breaking of particle. ✓ A Jaw Crusher reduces large size rocks or ore by placing the rock into compression. ✓ A fixed jaw, mounted in a "V" alignment is the stationary breaking surface, while the movable jaw exerts force on the rock by forcing it against the stationary plate. ✓ The space at the bottom of the "V" aligned jaw plates is the crusher product size gap, or the size of the crushed product from the jaw crusher. ✓ The rock remains in the jaws until it is small enough to pass through the gap at the bottom of the jaws. ✓ Angle between two jaws is between 20-30 degree. ✓ Larger lumps caught between upper parts of the jaw and broken into small piece by impact force. Small pieces come to narrower space at the bottom where compressive force does a sufficient size reduction and product obtained. ✓ Jaw crusher is classified into two types 1) Blake Jaw crusher 2) Dodge jaw crushers	3 7 10
4b	**Gyratory Crushers:** They are the HIGHEST CAPACITY MACHINES.  ✓ The crusher has two vertical, truncated conical shells. ✓ The frequency of this action is between 100 and 200 cycles per minute and the movement or throws between 20 and 50mm.	2 6

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	✓ Produces up to 4500 ton per hour of material being crushed. ✓ The reduction ratio is 4:1 to 6:1 and the machine is suitable for all hard, abrasive rocks but not for soft, porous material that may compact in the chamber.	8 10
5	a) **Comminution:** It is the reduction of solid materials from one average particle size to a smaller average particle size, by crushing, grinding, cutting, vibrating, or other processes. b) **Enrichment ratio:** It is the ratio of the grade of the concentrate to the feed, and is related to the efficiency of the process. For Ex: if grade of copper is 28% and in feed is 28% then enrichment ratio is 1 c) **Reduction Ratio:** The reduction ratio of a crushing stage can be defined as **"the ratio of maximum particle size entering to maximum particle size leaving the crusher"**. d) **Critical Speed:** The "Critical Speed" for a grinding mill is defined as "the rotational speed where centrifugal forces equal gravitational forces at the mill shells inside surface". This is the rotational speed where balls will not fall away from the mill's shell. Critical speed defines the velocity at which steel balls will centrifuge in the mill rather than cascade. $Nc = 42.3(D^{-0.5})$ Where, Nc = critical speed (revolutions per minute) D = mill effective inside diameter (m) A mill is designed to achieve 75-80% of critical speed.	2 2 2 3 1 10
6	**Comminution Theory:** ✓ Comminution theory is concerned with the relationship between energy input and the particle size made from a given feed size. ✓ All the theories of comminution assume that the material is brittle, so that no energy is adsorbed in processes such as elongation or contraction which is not finally utilized in breakage. **The oldest theory is that of Von Rittinger (1867),** which states that the energy consumed in the size reduction is proportional to the area of new surface produced. $E = K\left(\frac{1}{D_2} - \frac{1}{D_1}\right)$ Where, E is the energy input D_1 is the initial particle size D_2 is the final particle size and K is a constant. **The second theory is that of Kick (1885):** Energy used in deforming or fracturing a set of particles of equivalent shape is proportional to the ratio of the size changes	2 2

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$$E = K_K \log \frac{di}{dn}$$

Where, E = energy required for size reduction — 2
K_K = Kick's constant
di = initial diameter of particles
dn = final diameter of particles

Bond (1952)

- ✓ Bond's third theory equation is

$$W = \frac{10W_i}{\sqrt{P}} - \frac{10W_i}{\sqrt{F}}$$ — 2

- ✓ Where, the diameter in microns which 80% of the product passes is designated as P
  the size which 80% of the feed passes is designated as F
  the work input in kilowatt hours per short ton is W and
  Wi is the work index.

Hukki (1975) suggests that the relationship between energy and particle size is a composite form of the three laws.

- ✓ On the basis of Hukki's evaluation, Morrell (2004) has proposed a modification to Bond's equation that sees the exponent of P and F varying with size as

$$W = \frac{KM_i}{P^{f(P)}} - \frac{KM_i}{F^{f(F)}}$$ — 2

where M i is the material index related to the breakage property of the ore and K is a constant chosen to balance the units of the equation. The application of the new energy-size relation has been shown to be valid across the size range covered by most modern grinding circuits, i.e., 0.1 – 100 mm.

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OF TECHNOLOGY
OORGAUM, KGF- 563 120

10/05/2022
PRINCIPAL
Dr. T. Thimmaiah Institute of Technology
Oorgaum, K.G.F.-563120

Dr T THIMMAIAH INSTITUTE OF TECHNOLOGY, OORGAUM, K.G.F

DEPARTMENT OF MINING ENGINEERING

F. No:069AP

Department of Mining Engineering
2018 Scheme

B.E. VI Semester Ist Internal Quiz

Academic Year, Even Sem 2020 - 2021

Course Name: Mineral Processing & Fuel Technology **Course Code: 18MN63**

Date: 19.05.2021 **Max marks: 30**

Course Instructor: Paul Prasanna Kumar

Answer all Questions, each question carries 1 mark

1. The process of crushing and grinding ore into smaller fragments is called
   a) Comminution
   b) Pulverizing
   c) Granulating
   d) Mineral processing

2. Define Head
   a) the valuable mineral(s) separated from ore undergoing a specific treatment.
   b) the fraction of ore rejected in a separating process. It is usually the valueless portion
   c) the particles of locked valuable mineral and gangue, i.e., liberation has not been attained.
   d) is the feed to a concentrating system.

3. The grindability of minerals is measured in:
   a) Bond work index
   b) Scoville scale of attraction
   c) Bond flux density
   d) Mohs scale of mineral

4. What is Ore
   a) It is an inorganic substance which contains a definite chemical composition & an internal atomic structure occurring naturally by geological process
   b) a naturally occurring solid material from which a metal or valuable mineral can be extracted profitably
   c) made up of 2 or more minerals
   d) The unwanted material which does not have much economic value

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5. Objective of Mineral Processing
   a) To remove the gangue/waste from the ore.
   b) elimination of undesired chemical species
   c) Removal of most of the water by the use of the thickener
   d) To know the lump size, assay analysis, moisture analysis, grade, purity, chemical state etc.

6. What is Enrichment Ratio
   a) It is the ratio of the weight of the feed to the weight of the concentrates.
   b) the ratio of maximum particle size entering to maximum particle size leaving the crusher
   c) It is the ratio of the grade of the concentrate to the feed
   d) ratio of diameter to length

7. The fraction of ore rejected in a separating process is called as
   a) Middling
   b) Tailing
   c) Concentrates
   d) Feed

8. Fundamental Operations of Mineral Processing
   a) Liberation & Separation
   b) Crushing & Grinding
   c) Coning Quartering & Riffle
   d) Screening & Product Handling

9. What is Gangue?
   a) It is an inorganic substance which contains a definite chemical composition & an internal atomic structure occurring naturally by geological process.
   b) a naturally occurring solid material from which a metal or valuable mineral can be extracted profitably
   c) made up of 2 or more minerals
   d) The unwanted material which does not have much economic value

10. Separation dependent on magnetic properties
   a) Gravity concentration
   b) Froth flotation
   c) Low intensity magnetic separators
   d) High intensity separators

11. Define Concentrate
   a) the valuable mineral(s) separated from ore undergoing a specific treatment.
   b) It is usually the valueless portion
   c) the particles of locked valuable mineral and gangue
   d) is the feed to a concentrating system.

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12. What is Mineral Processing
    a) Mineral Processing is a process of mechanically separating the ore minerals from the gangue
    b) Mineral Processing is the extraction of the valuable metal in the case of metallic ores
    c) It is commonly regarded as the processing of raw minerals to yield marketable products
    d) all the above

13. Define Middling
    a) the valuable mineral(s) separated from ore undergoing a specific treatment.
    b) the fraction of ore rejected in a separating process. It is usually the valueless portion
    c) the particles of locked valuable mineral and gangue
    d) is the feed to a concentrating system.

14. Objectives of Sampling
    a) to know the losses in tailings, quality of middling & value of concentrate.
    b) To separate the particles of dissimilar physical nature.
    c) to enhance the grade of the ore.
    d) to fulfill the requirements of the consumer for a product of consistent quality

15. Separation based on differences in density between the minerals can be done by
    a) Froth flotation
    b) Gravity concentration
    c) Sorting
    d) Separators

16. Methods of Sampling are
    a) Manual & Mechanical
    b) Random & Systematic
    c) Open & Closed
    d) Screening

17. Crushing should be done only dry or wet & Grinding can be done by wet
    a) True
    b) False

18. Table Sampling is done to divide samples of 1 kg
    a) True
    b) False

19. Rpm for jaw crusher is between
    a) 200 - 400
    b) 100 - 200
    c) 450 - 700
    d) 60 – 100

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20. high aspect ratio mills is when
    a) length is 1.5-3 times that of the diameter
    b) the diameter is 1.5-3 times of the length
    c) diameter is approximately equal to the length
    d) the diameter is 3-1.5 times of the length

21. If Swing jaw is pivoted at the bottom, it is called as
    a) Blake Jaw Crusher
    b) Universal Jaw Crusher
    c) Dodge Jaw Crusher
    d) None of the Above

22. Gyratory Crusher Produces
    a) 8000 tons/hr
    b) 6400 tons/hr
    c) 5000 tons/hr
    d) 4500 tons/hr

23. Table samples are often used to divide samples of
    a) 1 kg
    b) 5 kgs
    c) 10 kgs
    d) >10 kgs

24. Reduction ratio of Cone Crusher is
    a) 4:1 - 6:1
    b) 3:1 - 7:1
    c) 3:1 - 4:1
    d) 3:1 - 6:1

25. Rpm for Ball Mill is between
    a) 200 - 400
    b) 100 - 200
    c) 60 - 100
    d) 450 - 700

26. The Zones in ball mill
    a) an empty zone,
    b) a dead zone,
    c) a zone of circular path and
    d) all the above

27. Mill is designed to achieve
    a) 75-80% of critical speed
    b) 40-60% of critical speed
    c) 60-75% of critical speed
    d) All the above

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28. Discharge of rod mill can be
    a) overflow discharge
    b) end peripheral discharge
    c) center peripheral discharge.
    d) All the above

29. The largest SAG mill is in
    a) South Africa
    b) Poland
    c) Australia
    d) Germany

30. Which theory is applicable for conventional Ball Mill
    a) Hukki' theory
    b) Bond's theory
    c) Kick's theory
    d) Rittinger's theory

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F. No-DrTTIT/IQAC/2020-21/069AP

Department of Mining Engineering

2018 Scheme

Other Assessment Scheme & Solution

B.E, VI Semester Ist Internal Quiz

Course Name: **Mineral Processing & Fuel Technology** Course Code: **18MN63**
Course Instructor: **Paul Prasanna Kumar** Max Marks: **30**
Date: **19.05.2021**

Q. No.	Brief Solution	Allotted Marks
1	Comminution	1
2	is the feed to a concentrating system	1
3	Bond work index	1
4	a naturally occurring solid material from which a metal or valuable mineral can be extracted profitably	1
5	To remove the gangue/waste from the ore.	1
6	It is the ratio of the grade of the concentrate to the feed	1
7	Tailing	1
8	Liberation & Separation	1
9	The unwanted material which does not have much economic value	1
10	Low intensity magnetic separators	1
11	the valuable mineral(s) separated from ore undergoing a specific treatment.	1
12	all the above	1
13	the particles of locked valuable mineral and gangue	1
14	to know the losses in tailings, quality of middling & value of concentrate.	1
15	Gravity concentration	1
16	Manual & Mechanical	1

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17	False	1
18	False	1
19	200 - 400	1
20	the diameter is 1.5-3 times of the length	1
21	Dodge Jaw Crusher	1
22	4500 tons/hr	1
23	5 kgs	1
24	3:1 - 7:1	1
25	60 - 100	1
26	all the above	1
27	75-80% of critical speed	1
28	All the above	1
29	Australia	1
30	Hukki' theory	1

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Department of Mining Engineering

Academic Year 2020-21

Internal Test - IA1

Sem VI

Sl.No	USN	Name of the Student	IA Marks	Assgn Marks	Total marks
1	1GV16MI041	MAHESH	22	9	32
2	1GV17MI025	SUDHAKAR S	25	8	34
3	1GV17MI030	YASHKUMAR	24	0	24
4	1GV17MI031	YUVARAJ	26	9	35
5	1GV18MI003	ASHFAQ P	25	5	31
6	1GV18MI005	AVINASH	27	9	36
7	1GV18MI007	BADRINATH B	26	10	36
8	1GV18MI010	ISHAPPA	25	10	35
9	1GV18MI011	KARTHIK P	27	10	37
10	1GV18MI012	KIRAN KUMAR EMMI S	26	10	35
11	1GV18MI013	KIRAN NADAGOUDA	22	4	25
12	1GV18MI014	KUMAR MARUTHI S	26	10	36
13	1GV18MI016	M DEVENDRA NAIDU	23	0	23
14	1GV18MI017	MANOJ RANAVATH J	25	8	33
15	1GV18MI019	MRUTHUNJAY KUMAR S B	25	10	35
16	1GV18MI021	NITHIN M S	28	6	34
17	1GV18MI023	PRABHU P	27	8	35
18	1GV18MI024	PRADEEP V	22	8	30
19	1GV18MI026	PUNEETH NJ	27	10	37
20	1GV18MI027	PURUSHOTHAMAN V	28	8	36
21	1GV18MI028	RAGHUVARAN MS	18	5	23
22	1GV18MI031	SASIKUMAR R	28	8	36
23	1GV18MI033	SUDHAKAR K S	22	7	29
24	1GV18MI035	THIRUNAVUKKARASU M	25	9	34
25	1GV18MI037	VIGNESH S	25	8	33
26	1GV19MI400	ANEES A	26	10	36
27	1GV19MI401	ARVIND KUMAR V	26	8	34
28	1GV19MI402	ASHLEY JOHN PAUL A	23	10	33
29	1GV19MI403	BASAVARAJ	26	8	34
30	1GV19MI404	BOYA VINAY	25	5	30
31	1GV19MI405	HARIKIRAN M	25	9	34
32	1GV19MI407	JASPER P	23	9	32
33	1GV19MI408	MICAH JOHN SIMEON J	22	8	31
34	1GV19MI409	MITHUN RAHUL B	24	0	24
35	1GV19MI410	MOHAN	27	10	37
36	1GV19MI411	SALEEM A	25	10	34
37	1GV19MI413	SHOHEB M	26	5	32
38	1GV19MI414	SHREYAS KAMMALA	24	7	31
39	1GV19MI415	SIDDAROODHA BATAKURKI	26	5	31

Course Instructor
7/6/2021

03/09/2021

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F.No:DrTTIT/IQAC/2020-21/066AP

Department of Mining Engineering

Internal Examination Result Analysis

FIRST Internal Test

Date: 7/6/2021

Semester:	**VI**	**Academic Year:**	**2020-21**
Course:	**Fuel Technology**	**Course Code:**	**18MN63**

Sl.No.		
1	**Total No. of Students:**	39
2	**No. of Students Absent:**	
3	**No. of Students Appeared:**	39
4	**No. of Students Passed:**	39
5	**No. of Students Failed:**	0
6	**Percentage of Pass**	
	Based on Total Students: :	100
	Based on Students Appeared:	100

Result Analysis

Description	Below 40%	Above 75%
No. of Students	0	32

Course Instructor

7/6/2021

HOD 7.6.2021

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Department of Mining Engineering

Internal Examination Result Analysis

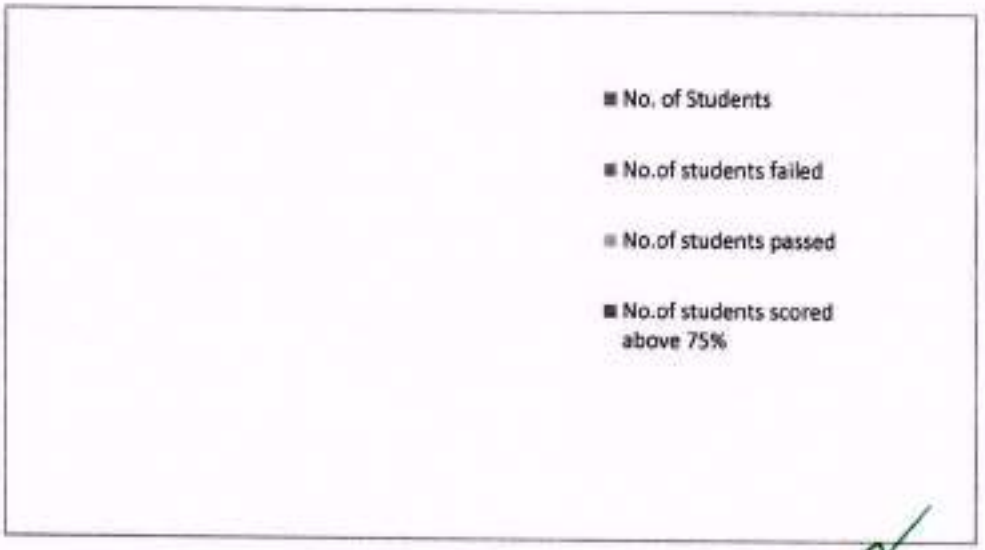
First Internal Test

Date: 7/6/2021

Semester: VI **Academic Year:** 2020-21

Course: Fuel Technology **Course Code:** 18MN63

No. of Students	No.of students failed	No.of students passed	No.of students scored above 75%
39	0	39	32



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F.No: DrTTIT/IQAC/2020-21/066BP

Department of Mining Engineering

First Internal Test

Corrective Action Report

Semester: VI **Academic Year:** 2020-21

Course: ral Processing & Fuel Techn **Course Code:** 18MN63

Sl.No.	Range of unit test marks %	No of Students	Actions taken to improve the performance	Remarks
1	Below 40%	0	—	
2	>75%	32	Advised the students to prepare previous years question papers	

7/6/2021
Course Instructor

7.6.2021
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14/04/2022
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F.No:DrTTIT/IQAC/2020-21/066CP

Department of Mining Engineering

Ist Internal Test

Remedial Class Report(< 40%)

Semester: VI **Academic Year:** 2020-21

Course: MINERAL PROCESSING & FUEL TECH. **Course Code:** 18MN63

Course Instructor: PAUL PRASANNA KUMAR

From: – NA – **To:** – NA –

Total Duration: – NA –

Sl.No	USN	Name	Topics covered	Remarks

NIL

7/6/2021
Course Instructor

11/01/2022
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F.No: DrTTIT/IQAC/2020-21/066DP

Department of Mining Engineering
Ist IA Internal Test
Counseling Report (>75%)

Semester: VI **Academic Year:** 2020-21
Course: MINERAL PROCESSING & FUEL TECHNOLOGY **Course Code:** 18MN63
Counseled Date: 7/6/2021 **Total Duration:** 01 hour

Sl. No	USN	Name	Counseling Report	Remarks
1	1GV16MI041	MAHESH	Asked the students to prepare all the topics of all the modules & also to refer previous years VTU question paper.	
2	1GV17MI025	SUDHAKAR S		
3	1GV17MI031	YUVARAJ		
4	1GV18MI003	ASHFAQ P		
5	1GV18MI005	AVINASH		
6	1GV18MI007	BADRINATH B		
7	1GV18MI010	ISHAPPA		
8	1GV18MI011	KARTHIK P		
9	1GV18MI012	KIRAN KUMAR EMMI S		
10	1GV18MI014	KUMAR MARUTHI S		
11	1GV18MI017	MANOJ RANAVATH J		
12	1GV18MI019	MRUTHUNJAY KUMAR S B		
13	1GV18MI021	NITHIN M S		
14	1GV18MI023	PRABHU P		
15	1GV18MI024	PRADEEP V		
16	1GV18MI026	PUNEETH NJ		
17	1GV18MI027	PURUSHOTHAMAN V		
18	1GV18MI031	SASIKUMAR R		
19	1GV18MI035	THIRUNAVUKKARASU M		
20	1GV18MI037	VIGNESH S		
21	1GV19MI400	ANEES A		
22	1GV19MI401	ARVIND KUMAR V		
23	1GV19MI402	ASHLEY JOHN PAUL A		
24	1GV19MI403	BASAVARAJ		
25	1GV19MI404	BOYA VINAY		
26	1GV19MI405	HARIKIRAN M		
27	1GV19MI407	JASPER P		
28	1GV19MI408	MICAH JOHN SIMEON J		
29	1GV19MI410	MOHAN		
30	1GV19MI411	SALEEM A		
31	1GV19MI413	SHOHEB M		
32	1GV19MI414	SHREYAS KAMMALA		
33	1GV19MI415	SIDDAROODHA BATAKURKI		

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Course Instructor

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F.No-DrTTIT/IQAC/2020-21/059AP

Department of Mining Engineering

B.E. 6th Semester IInd Internal Assessment Test

Scheme : 2018 **Academic Year: 2020 - 21**

Course Name : Mineral Processing & Fuel Technology **Course Code : 18MN63**

Duration : 90 minutes **Max marks** : 50

Course Instructor : Paul Prasanna Kumar **Date** : 30.06.2021

Answer any one full Question from each part

Part-A (20 marks)

Q.No.	Question	Marks	CO	RBT
1a	Derive the equations to calculate the mass balance on screen	10	CO3	2
1b	With neat sketch, explain hand screening and automatic screening	10	CO3	2
2a	Identify the purpose of industrial screening and factors affecting the industrial screening.	10	CO3	2
2b	With a neat sketch, discuss the construction and working principle of grizzly.	10	CO3	2

Part-B (20 marks)

3a	With neat sketch, explain the working principle of trommel (or) revolving screen.	10	CO3	2
3b	Summarize the principle of mechanical classifier with neat sketch	10	CO3	2
4a	With a neat sketch, explain the working principle of cyclone separator (or) hydrocyclone.	10	CO3	2
4b	With neat sketch, discuss the concept of free & hindered settling.	10	CO3	2

Part-C (10 marks)

5	Explain the principles of settling particle in a fluid.	10	CO3	2
6	With a neat sketch, explain the working principle of spiral classifier.	10	CO3	2

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Course Instructor

28.6.21
PAC Member (Name & Signature)

HOD

11/01/2022
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Department of Mining Engineering

B.E. VI Semester II Internal Assessment Test

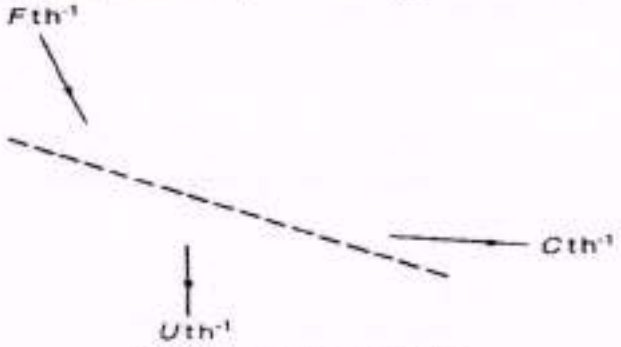
Scheme and Solution

Scheme :2018 **Academic Year: 2020-21**

Course Name: Mineral Processing & Fuel Technology **Course Code: 18MN63**

Course Instructor: Paul Prasanna Kumar **Max marks:50**

Date: 28/06/2021

Q.No.	Brief Solution	Marks
1a	**Mass Balance on Screen:** Consider a screen as shown in the figure below, the feed to which is Fth^{-1}. Two products are generated. A coarse product of Cth^{-1} overflows from the screen, and a fine product of Uth^{-1} passes through the screen.  ***Mass Balance on a Screen*** Let f be the fraction of material above the cut point size in the feed; c be the fraction of material above the cut point size in the overflow; and u be the fraction of material above the cut point size inthe underflow, f, c, and u can be determined by sieving a representative sample of each of the fractions on a laboratory screen of the same aperture size as the industrial screen and assuming this to be 100% efficient. The mass balance on the screen is: $F = C + U$ The mass balance of the oversize material is: $Ff = Cc + Uu$ And the mass balance of the undersize material is: $F(1 - f) = C(1 - c) + U(1 - u)$ Hence, $\frac{C}{F} = \frac{f - u}{c - u}$ and	1 1 1 1 1

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	$$\frac{U}{F} = \frac{c-f}{c-u}$$	1
	The recovery of oversize material into the screen overflow is: $$\frac{Cc}{Ff} = \frac{c\,(f-u)}{f\,(c-u)} \qquad ----------1$$	1
	And the corresponding recovery of undersize material in the screen underflow is: $$= \frac{U\,(1-u)}{F\,(1-f)}$$ $$= \frac{(1-u)(c-f)}{(1-f)(c-u)} \qquad ----------2$$	1
	The equations 1 & 2 measures the effectiveness of the screen in separating the coarse material from the underflow and the fine material from the overflow.	
	A combined effectiveness (or) overall efficiency, E is then obtained by multiplying the two equations together: $$E = \frac{c(f-u)(1-u)(c-f)}{f(c-u)^2(1-f)} \qquad ----------3$$	1
	For screens where the aperture and the cut point are similar (and if there are no broken or deformed apertures), the amount of coarse material in the underflow is usually very low.	
	A simplification of equation 3 can be obtained by assuming that it is, in fact, zero (i.e., u = 0), in which case the formula for fines recovery and that for the overall efficiency both reduce to: $$E = \frac{c-f}{c(1-f)}$$	
	This formula is widely used and implies that recovery of the coarse material in the overflow is 100%.	1
		10
1b	**HAND SCREENING** 	2
	✓ Three screens are assembled (NEST of SIEVES)- the coarsest at the	

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PO MAPPING

COS	1	2	3	4	5	6	7	8	9	10	11	12
CO1	1				2	3	1	2	3	1		1
CO2	3			1	3		3	2	3	1	3	1
CO3	2	2			3	3	3	2	2	1	2	1
CO4	2				3	2	3	2	2	1		1
CO5	3			2	2	1	1	1	1	1		1
CO6	3				2	1	3	2	1	1		1
Total	14	2	0	3	15	10	14	11	12	6	5	6
PO AVERAGE	2.33	2.00		1.50	2.50	2.00	2.33	1.83	2.00	1.00	2.50	1.00

PSO MAPPING

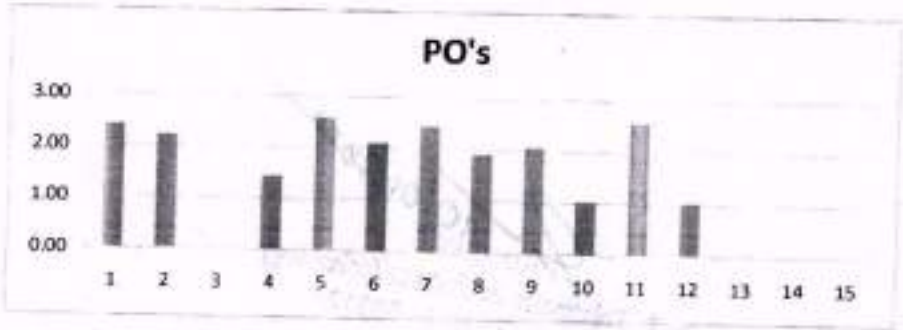
COS	1	2	3
CO1	3	1	3
CO2	3	1	3
CO3	3	1	3
CO4	3	1	3
CO5	1	1	3
CO6	1	1	3
Total	14	6	18
PSO AVERAGE	2.33	1.00	3.00

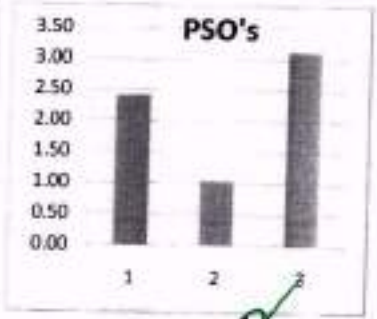
ATTAINMENT

COS	1	2	3	4	5	6	7	8	9	10	11	12
CO1	1.05				2.10	3.15	1.05	2.10	3.15	1.05		1.05
CO2	2.96			0.99	2.96		2.96	1.97	2.96	0.99	2.96	0.99
CO3	2.23	2.23			3.34	3.34	3.34	2.23	2.23	1.11	2.23	1.11
CO4	1.95				2.93	1.95	2.93	1.95	1.95	0.98		0.98
CO5	2.87			1.91	1.91	0.96	0.96	0.96	0.96	0.96		0.96
CO6	3.51				2.34	1.17	3.51	2.34	1.17	1.17		1.17
PO AVERAGE	2.43	2.23		1.45	2.60	2.11	2.66	1.92	2.07	1.04	2.59	1.04

ATTAINMENT

COS	1	2	3
CO1	3.15	1.05	3.15
CO2	2.96	0.99	2.96
CO3	3.34	1.11	3.34
CO4	2.93	0.98	2.93
CO5	0.96	0.96	2.87
CO6	1.17	1.17	3.51
PSO AVERAGE	2.42	1.04	3.13





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Target is 50% marks
Attainment level 1: 40% students scoring more than 50% marks
Attainment level 2: 45% students scoring more than 50% marks
Attainment level 3: 50% students scoring more than 50% marks

PERCENTAGE OF STUDENTS SCORING > 50% of Marks (For Internal Assessment)						
CO'S	CO1	CO2	CO3	CO4	CO5	CO6
Number of Students Scored above 50% marks	19	12	27	11	11	37
Number of Students attempted the test	39	39	39	39	39	39
% OF STUDENTS	48.72	30.77	69.23	28.21	28.21	94.87
Attainment Level	2	0	3	0	0	3

PERCENTAGE OF STUDENTS SCORING > 50% of marks (For University Examination)	
Number of Students Scored above 50 % of Marks	28
Number of Students attempted the Examination	39
% OF STUDENTS	71.79
Attainment Level	3

Calculation for CO attainment by direct assessment (40% weightage for IA & 60% SEE marks)	Attainment
CO1	**0.63**
CO2	**0.55**
CO3	**0.71**
CO4	**0.54**
CO5	**0.54**
CO6	**0.81**

CO attainment using Course survey	
CO1	2.74
CO2	2.71
CO3	2.74
CO4	2.71
CO5	2.61
CO6	2.61

Overall CO attainment	
CO1	1.049
CO2	0.985
CO3	1.114
CO4	0.977
CO5	0.957
CO6	1.170

Weightage for indirect assessment	
Direct	Indirect
0.8	0.2

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DR. T. THIMMAIAH INSTITUTE OF TECHNOLOGY , KOLAR

Student Attendance Report for 19 Apr 2021 - 21 Aug 2021

Subject :MINERAL PROCESSING & FUEL TECHNOLOGY (18MN63)

Attendance Criteria:ALL

Dept-MI Semester: 6 Section: A

Faculty Name:Mr Paul Prasanna Kumar

Sl#	Name	USN/ID	19/4	20/4	21/4	22/4	23/4	26/4	27/4	28/4	29/4	30/4	3/5	4/5	5/5
1	Anees A	1GV19MI400	P	P	P	P	P	P	P	P	A	P	P	P	P
2	Arvind Kumar V	1GV19MI401	P	P	P	P	P	A	P	P	P	P	P	P	P
3	Ashfaq P	1GV18MI003	P	P	P	P	A	P	P	P	P	A	P	A	P
4	Ashley John Paul A	1GV19MI402	P	P	P	P	P	P	P	P	P	P	A	P	P
5	Avinash	1GV18MI005	P	P	P	P	P	P	A	P	P	P	A	P	A
6	Badrinath B	1GV18MI007	P	A	P	P	P	A	P	P	P	P	A	P	P
7	Basavaraj	1GV19MI403	P	A	P	P	P	P	P	P	P	P	P	A	P
8	Boya Vinay	1GV19MI404	A	A	P	P	P	P	P	P	P	P	P	P	A
9	Harikiran M	1GV19MI405	P	P	P	P	P	P	P	A	P	P	P	P	P
10	Ishappa	1GV18MI010	P	A	P	P	P	P	P	A	P	P	P	A	A
11	Jasper P	1GV19MI407	P	P	P	A	P	P	A	P	P	P	P	P	P
12	Karthik P	1GV18MI011	P	A	P	P	P	P	P	P	P	P	A	P	P
13	Kiran Kumar Emmi S	1GV18MI012	P	P	P	P	P	A	P	P	P	P	P	P	P
14	Kiran Nadagouda	1GV18MI013	A	P	A	P	P	P	P	P	P	P	P	P	P
15	Kumarmaruthi S	1GV18MI014	P	P	P	A	P	P	P	A	P	P	P	P	P
16	M Devendra Naidu	1GV18MI016	A	A	P	P	P	P	P	P	P	P	P	A	P
17	Mahesh	1GV16MI041	A	P	P	P	P	A	P	P	P	A	P	A	P
18	Manoj Ranavath J	1GV18MI017	A	P	P	P	P	P	P	P	P	P	A	P	P
19	Micah John Simeon J	1GV19MI408	P	P	P	P	P	P	P	P	P	P	P	P	P
20	Mithun Rahul B	1GV19MI409	P	A	P	P	A	P	P	P	A	P	P	P	P
21	Mohan	1GV19MI410	P	P	P	P	P	P	A	P	P	P	A	P	P
22	Mruthunjay Kumar S B	1GV18MI019	P	P	P	P	P	P	P	P	P	P	P	P	A
23	Nithin M S	1GV18MI021	P	P	P	P	P	P	P	P	P	P	A	P	P
24	Prabhu P	1GV18MI023	P	P	P	P	P	P	P	P	P	P	A	P	P

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25	Pradeep V	1GV18MI024	P	P	P	P	P	A	P	P	P	P	P	P	P
26	Puneeth N J	1GV18MI026	P	P	P	P	P	P	P	A	P	P	P	P	P
27	Purushothaman V	1GV18MI027	P	P	P	P	P	P	A	P	A	P	P	P	P
28	Raghuvaran M S	1GV18MI028	P	A	P	P	P	A	P	P	P	P	P	P	P
29	Saleem A	1GV19MI411	P	P	A	P	P	A	P	P	P	P	P	A	P
30	Sasikumar R	1GV18MI031	P	P	P	P	P	P	P	P	P	P	A	P	P
31	Shoheb M	1GV19MI413	P	A	P	P	P	P	P	P	P	P	P	A	P
32	Shreyas Kammala	1GV19MI414	A	A	P	P	P	P	P	P	P	P	P	A	P
33	Siddaroodha Batakurki	1GV19MI415	P	P	A	P	A	P	P	P	P	P	P	P	A
34	Sudhakar K S	1GV18MI033	P	P	A	A	P	P	P	P	P	P	P	P	P
35	Sudhakar S	1GV17MI025	P	P	P	A	P	P	P	P	P	P	P	P	P
36	Thirunavukkarasu M	1GV18MI035	P	P	P	P	P	P	P	P	P	P	P	P	P
37	Vignesh S	1GV18MI037	P	A	P	P	P	P	P	P	P	P	P	P	A
38	Yeshkumar	1GV17MI030	A	P	A	P	P	P	A	P	P	P	P	P	P
39	Yuvaraj	1GV17MI031	A	A	P	P	P	A	P	P	A	P	A	P	P

Sl#	Name	USN/ID	6/5	7/5	10/5	11/5	12/5	13/5	17/5	18/5	19/5	20/5	21/5	1/6	2/6
1	Anees A	1GV19MI400	P	A	P	P	P	P	P	P	A	P	P	P	P
2	Arvind Kumar V	1GV19MI401	P	P	A	P	P	P	P	P	P	P	P	A	P
3	Ashfaq P	1GV18MI003	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Ashley John Paul A	1GV19MI402	P	P	A	P	P	P	P	P	P	P	P	P	P
5	Avinash	1GV18MI005	P	A	P	P	P	P	P	P	P	P	P	P	P
6	Badrinath B	1GV18MI007	P	P	P	A	P	P	P	P	P	P	P	P	P
7	Basavaraj	1GV19MI403	P	P	A	P	P	P	P	P	P	P	P	P	P
8	Boya Vinay	1GV19MI404	P	P	P	P	P	P	P	P	P	P	P	P	P
9	Harikiran M	1GV19MI405	P	P	P	P	P	P	P	P	P	P	P	P	P
10	Ishappa	1GV18MI010	P	P	P	P	P	P	P	P	P	P	P	P	P
11	Jasper P	1GV19MI407	A	P	P	P	P	P	P	P	P	P	P	P	P
12	Karthik P	1GV18MI011	P	P	P	P	A	P	P	P	P	P	P	P	P
13	Kiran Kumar Emmi S	1GV18MI012	A	P	P	P	P	P	P	P	P	P	P	P	P
14	Kiran Nadagouda	1GV18MI013	P	P	A	P	P	A	P	P	P	P	P	P	P
15	Kumarmaruthi S	1GV18MI014	P	P	P	P	P	P	P	A	P	P	P	P	P
16	M Devendra Naidu	1GV18MI016	P	P	P	P	P	P	P	P	P	P	P	P	P
17	Mahesh	1GV16MI041	P	P	P	P	A	P	P	P	P	P	P	P	P

10/6/2022

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18	Manoj Ranavath J	1GV18MI017	P	P	P	A	P	P	P	P	P	P	P	P	P	
19	Micah John Simeon J	1GV19MI408	P	P	P	A	P	P	P	P	P	P	P	P	P	
20	Mithun Rahul B	1GV19MI409	P	P	P	P	P	P	P	P	P	P	P	P	P	
21	Mohan	1GV19MI410	P	P	P	P	P	P	P	P	P	P	P	P	P	
22	Mruthunjay Kumar S B	1GV18MI019	P	P	P	P	P	P	A	P	P	P	P	P	P	
23	Nithin M S	1GV18MI021	P	A	P	P	P	P	P	P	P	P	P	P	A	
24	Prabhu P	1GV18MI023	P	P	P	P	P	P	P	P	P	P	A	P	P	
25	Pradeep V	1GV18MI024	P	P	P	P	P	P	P	P	A	P	P	P	P	
26	Puneeth N J	1GV18MI026	P	P	P	A	P	P	P	P	P	P	P	P	P	
27	Purushothaman V	1GV18MI027	P	P	P	P	P	P	P	P	P	P	P	P	P	
28	Raghuvaran M S	1GV18MI028	P	P	A	P	P	P	P	P	P	A	P	P	P	
29	Saleem A	1GV19MI411	P	P	P	P	P	P	P	A	P	P	P	P	P	
30	Sasikumar R	1GV18MI031	P	P	P	P	P	P	P	P	P	P	P	A	P	
31	Shoheb M	1GV19MI413	P	A	P	P	P	P	P	P	P	P	P	P	P	
32	Shreyas Kammala	1GV19MI414	P	P	P	P	P	P	P	P	P	P	P	P	P	
33	Siddaroodha Batakurki	1GV19MI415	P	P	P	P	P	P	P	P	P	P	P	P	P	
34	Sudhakar K S	1GV18MI033	P	A	P	P	P	P	P	P	P	P	P	P	P	
35	Sudhakar S	1GV17MI025	P	P	A	P	P	P	A	P	P	P	P	P	P	
36	Thirunavukkarasu M	1GV18MI035	A	P	A	P	P	P	P	P	P	P	P	P	P	
37	Vignesh S	1GV18MI037	P	P	P	P	P	P	P	P	P	P	P	P	P	
38	Yeshkumar	1GV17MI030	P	P	A	P	P	P	A	P	P	P	P	P	P	
39	Yuvaraj	1GV17MI031	A	P	P	P	P	P	P	P	P	P	A	P	P	

Sl#	Name	USN/ID	3/6	4/6	7/6	8/6	9/6	10/6	11/6	14/6	15/6	16/6	17/6	18/6	21/6
1	Anees A	1GV19MI400	P	P	A	P	P	P	P	P	P	P	P	A	P
2	Arvind Kumar V	1GV19MI401	P	P	P	P	P	P	P	P	P	P	P	P	P
3	Ashfaq P	1GV18MI003	P	P	P	P	P	P	P	P	P	P	P	P	P
4	Ashley John Paul A	1GV19MI402	A	P	P	P	P	P	P	P	P	P	P	P	P
5	Avinash	1GV18MI005	P	P	P	P	P	P	P	P	P	P	P	A	P
6	Badrinath B	1GV18MI007	P	P	P	P	P	P	P	P	P	P	P	P	P
7	Basavaraj	1GV19MI403	P	P	P	P	P	P	P	P	P	P	P	P	P
8	Boya Vinay	1GV19MI404	P	P	P	P	P	P	P	A	P	P	P	P	P
9	Harikiran M	1GV19MI405	P	P	P	P	P	P	P	P	P	P	A	P	P
10	Ishappa	1GV18MI010	P	P	P	P	P	P	P	P	P	P	P	P	P

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11	Jasper P	1GV19MI407	P	P	P	P	P	P	P	P	P	P	P	P	P	P
12	Karthik P	1GV18MI011	P	P	P	P	P	A	P	P	A	P	P	P	P	P
13	Kiran Kumar Emmi S	1GV18MI012	P	P	P	P	P	P	P	P	P	P	P	P	P	P
14	Kiran Nadagouda	1GV18MI013	P	P	P	P	P	P	P	P	P	P	P	P	P	P
15	Kumarmaruthi S	1GV18MI014	P	P	P	P	P	P	P	A	P	P	P	P	P	P
16	M Devendra Naidu	1GV18MI016	P	A	P	P	P	P	P	P	P	P	P	P	P	P
17	Mahesh	1GV16MI041	P	P	P	P	P	P	P	P	P	P	P	P	P	P
18	Manoj Ranavath J	1GV18MI017	P	A	P	P	P	P	P	P	P	P	P	P	P	P
19	Micah John Simeon J	1GV19MI408	P	P	P	A	P	P	P	P	P	P	P	P	P	P
20	Mithun Rahul B	1GV19MI409	P	P	P	P	P	P	P	P	P	P	P	P	P	P
21	Mohan	1GV19MI410	P	P	P	P	P	P	P	P	P	P	P	P	P	A
22	Mruthunjay Kumar S B	1GV18MI019	P	P	P	P	P	P	P	P	P	P	P	P	P	P
23	Nithin M S	1GV18MI021	P	P	P	P	P	P	P	P	P	P	P	P	P	P
24	Prabhu P	1GV18MI023	P	P	P	P	P	P	P	P	P	P	P	P	P	P
25	Pradeep V	1GV18MI024	P	P	P	P	P	P	P	P	P	P	A	P	P	P
26	Puneeth N J	1GV18MI026	P	P	P	P	P	P	P	P	P	P	P	P	P	P
27	Purushothaman V	1GV18MI027	P	P	P	P	P	A	P	P	P	P	P	A	P	P
28	Raghuvaran M S	1GV18MI028	P	P	P	A	A	P	P	P	P	P	P	P	P	P
29	Saleem A	1GV19MI411	P	P	P	P	P	P	P	P	P	P	P	P	P	P
30	Sasikumar R	1GV18MI031	P	P	P	P	P	P	P	P	A	P	P	P	P	P
31	Shoheb M	1GV19MI413	P	P	P	P	P	P	P	P	P	P	P	P	P	P
32	Shreyas Kammala	1GV19MI414	P	P	P	P	P	P	P	P	P	P	P	P	P	P
33	Siddaroodha Batakurki	1GV19MI415	P	P	A	P	P	P	P	P	P	P	P	P	P	P
34	Sudhakar K S	1GV18MI033	P	P	P	P	P	P	A	P	P	P	P	P	P	P
35	Sudhakar S	1GV17MI025	P	P	P	P	P	P	P	P	P	P	P	P	P	P
36	Thirunavukkarasu M	1GV18MI035	P	P	P	P	P	P	P	P	P	P	P	P	P	A
37	Vignesh S	1GV18MI037	P	P	P	P	P	P	P	P	P	P	P	P	P	P
38	Yeshkumar	1GV17MI030	P	P	P	P	P	P	P	P	P	P	P	P	P	P
39	Yuvaraj	1GV17MI031	P	P	P	P	P	P	P	P	P	P	P	P	P	P

16/01/2022

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Sl#	Name	USN/ID	23/6	24/6	25/6	5/7	6/7	7/7	8/7	9/7	12/7	13/7	14/7	15/7	16/7
1	Anees A	1GV19MI400	P	P	P	P	P	P	P	P	P	P	P	P	P
2	Arvind Kumar V	1GV19MI401	P	P	P	P	P	P	P	P	A	P	P	P	P
3	Ashfaq P	1GV18MI003	P	P	P	P	P	P	P	P	P	P	A	P	P
4	Ashley John Paul A	1GV19MI402	P	P	P	P	P	P	P	P	P	P	P	P	P
5	Avinash	1GV18MI005	P	P	P	P	P	P	P	P	P	P	P	P	P
6	Badrinath B	1GV18MI007	P	P	A	A	P	P	P	P	P	P	P	P	P
7	Basavaraj	1GV19MI403	P	P	P	P	P	P	P	P	A	P	P	P	P
8	Boya Vinay	1GV19MI404	P	P	P	P	P	P	P	P	P	P	P	P	P
9	Harikiran M	1GV19MI405	P	P	P	P	P	P	P	P	P	P	P	P	P
10	Ishappa	1GV18MI010	P	P	P	P	P	P	P	P	A	P	P	P	P
11	Jasper P	1GV19MI407	P	P	P	P	P	P	P	P	P	P	P	P	A
12	Karthik P	1GV18MI011	P	P	P	P	A	P	P	P	P	P	P	P	P
13	Kiran Kumar Emmi S	1GV18MI012	P	P	P	P	P	P	P	P	P	P	P	P	P
14	Kiran Nadagouda	1GV18MI013	P	P	P	P	P	A	P	P	P	P	P	P	A
15	Kumarmaruthi S	1GV18MI014	P	P	A	P	P	P	P	P	P	P	P	P	P
16	M Devendra Naidu	1GV18MI016	P	P	P	P	P	P	A	P	P	P	P	P	P
17	Mahesh	1GV16MI041	P	P	P	A	P	P	P	P	P	P	P	P	P
18	Manoj Ranavath J	1GV18MI017	P	P	P	P	P	A	P	P	P	P	P	P	P
19	Micah John Simeon J	1GV19MI408	P	P	P	P	P	P	P	P	P	A	P	P	P
20	Mithun Rahul B	1GV19MI409	P	P	A	P	P	P	P	P	P	P	P	A	P
21	Mohan	1GV19MI410	P	P	P	P	P	P	P	P	P	P	P	P	P
22	Mruthunjay Kumar S B	1GV18MI019	P	P	P	P	P	P	P	P	A	P	P	P	P
23	Nithin M S	1GV18MI021	P	P	P	A	P	P	P	P	P	P	P	P	P
24	Prabhu P	1GV18MI023	P	P	P	P	P	P	P	P	P	P	P	P	P
25	Pradeep V	1GV18MI024	P	P	P	P	P	P	P	P	P	P	P	P	P
26	Puneeth N J	1GV18MI026	P	P	P	P	A	P	P	P	P	P	P	P	P
27	Purushothaman V	1GV18MI027	P	P	P	P	P	P	P	P	P	A	P	P	P
28	Raghuvaran M S	1GV18MI028	P	P	P	P	P	P	P	P	P	P	A	P	P
29	Saleem A	1GV19MI411	P	P	P	P	P	P	P	P	A	P	P	P	P
30	Sasikumar R	1GV18MI031	P	P	P	P	P	P	A	P	P	P	P	A	P
31	Shoheb M	1GV19MI413	A	P	A	P	P	P	P	P	P	P	P	P	P
32	Shreyas Kammala	1GV19MI414	A	P	P	P	P	P	P	P	P	P	P	P	A
33	Siddaroodha Batakurki	1GV19MI415	P	P	P	P	P	P	P	P	P	P	P	P	P

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34	Sudhakar K S	1GV18MI033	P	P	P	P	P	P	P	P	P	P	P	P	P
35	Sudhakar S	1GV17MI025	P	P	P	P	P	P	P	P	P	P	P	P	P
36	Thirunavukkarasu M	1GV18MI035	P	P	P	P	P	P	P	P	A	P	P	P	P
37	Vignesh S	1GV18MI037	A	P	P	P	P	P	A	P	P	P	P	P	P
38	Yeshkumar	1GV17MI030	P	P	P	P	P	P	P	P	P	P	P	P	P
39	Yuvaraj	1GV17MI031	P	P	P	P	P	P	P	P	P	P	P	P	P

Sl#	Name	USN/ID	22/7	12/8	13/8	14/8	# of Days Present	Attendance % till Date
1	Anees A	1GV19MI400	P	P	P	P	51/56	92
2	Arvind Kumar V	1GV19MI401	P	P	P	P	52/56	93
3	Ashfaq P	1GV18MI003	P	P	P	P	52/56	93
4	Ashley John Paul A	1GV19MI402	P	P	P	P	53/56	95
5	Avinash	1GV18MI005	P	P	P	P	51/56	92
6	Badrinath B	1GV18MI007	P	P	P	P	50/56	90
7	Basavaraj	1GV19MI403	P	P	P	P	52/56	93
8	Boya Vinay	1GV19MI404	P	P	P	P	52/56	93
9	Harikiran M	1GV19MI405	P	P	P	P	54/56	97
10	Ishappa	1GV18MI010	P	P	P	P	51/56	92
11	Jasper P	1GV19MI407	P	P	P	P	52/56	93
12	Karthik P	1GV18MI011	P	P	P	P	50/56	90
13	Kiran Kumar Emmi S	1GV18MI012	P	P	P	P	54/56	97
14	Kiran Nadagouda	1GV18MI013	P	P	P	P	50/56	90
15	Kumarmaruthi S	1GV18MI014	P	P	P	P	51/56	92
16	M Devendra Naidu	1GV18MI016	P	P	P	P	51/56	92
17	Mahesh	1GV16MI041	P	P	P	P	50/56	90
18	Manoj Ranavath J	1GV18MI017	P	P	P	P	51/56	92
19	Micah John Simeon J	1GV19MI408	P	P	P	P	53/56	95
20	Mithun Rahul B	1GV19MI409	P	P	P	P	51/56	92
21	Mohan	1GV19MI410	P	P	P	P	53/56	95
22	Mruthunjay Kumar S B	1GV18MI019	P	P	P	P	52/56	93
23	Nithin M S	1GV18MI021	P	P	P	P	52/56	93
24	Prabhu P	1GV18MI023	P	P	P	P	53/56	95
25	Pradeep V	1GV18MI024	P	P	P	P	53/56	95
26	Puneeth N J	1GV18MI026	P	P	P	P	53/56	95

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27	Purushothaman V	1GV18MI027	P	P	P	P	51/56	92
28	Raghuvaran M S	1GV18MI028	P	P	P	P	49/56	88
29	Saleem A	1GV19MI411	P	P	P	P	51/56	92
30	Sasikumar R	1GV18MI031	P	P	P	P	51/56	92
31	Shoheb M	1GV19MI413	P	P	P	P	51/56	92
32	Shreyas Kammala	1GV19MI414	P	P	P	P	51/56	92
33	Siddaroodha Batakurki	1GV19MI415	P	P	P	P	52/56	93
34	Sudhakar K S	1GV18MI033	P	P	P	P	52/56	93
35	Sudhakar S	1GV17MI025	P	P	P	P	53/56	95
36	Thirunavukkarasu M	1GV18MI035	P	P	P	P	52/56	93
37	Vignesh S	1GV18MI037	P	P	P	P	52/56	93
38	Yeshkumar	1GV17MI030	P	P	P	P	51/56	92
39	Yuvaraj	1GV17MI031	P	P	P	P	49/56	88

Staff Handling

23/8/2021

23.8.2021

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23/08/2021

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