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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, NOV / DEC 2024

MINING ENGINEERING

MI 5016 MATERIAL HANDLING

(Regulation2019)

Time:3 hrs

Max. Marks: 100

CO1	Design and Application of Hoisting Systems
CO2	Application of men and material transport system
CO3	Design concept of scraper haulage, aerial ropeway and belt conveyor system in mines
CO4	Design and Constructional Features of Existing and Modern Belt Conveyors
CO5	Material Handling Systems and its principle to convey the minerals or materials from mines, plants and workshops.

BL – Bloom's Taxonomy Levels

(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2=20 Marks)

(Answer all Questions)

Q.No	Questions	Marks	CO	BL
1.	Mention the significance of bulk material handling system.	2	1	L1
2.	State the salient features of portal scraper reclaimers.	2	1	L2
3.	Illustrate the advantages and disadvantages of pneumatic conveyors.	2	2	L1
4.	Depict the selection factors for pneumatic handling system.	2	2	L2
5.	List out any ten essential elements for belt conveyors.	2	3	L1
6.	What do you mean by hot vulcanization process?	2	3	L4
7.	Write short notes on aerial ropeway.	2	4	L2
8.	Elaborate the scope of applicability of cable belt conveyors.	2	4	L2
9.	Explain the term 'luffing'.	2	5	L2
10.	Classify the types of slewing mechanism.	2	5	L1

PART- B (5x 13=65 Marks)

Q.No	Questions	Marks	CO	BL
11 (a)	Describe the selection criteria for suitable material handling system. Illustrate the various types of bulk handling system and their design adopted for your own choice of mineral handling with neat sketches	13	1	L2
OR				
11 (b)	Write short notes on (i) Bridge type bucket wheel reclaimer (ii) Boom type bucket wheel reclaimer	7 6	1	L2
12 (a)	Discuss in detail of working principle and design considerations for hydraulic conveyors along with advantages and disadvantages of the hydraulic conveyors.	13	2	L3
OR				

12 (b)	Describe in detail of working principles of positive pressure system and negative pressure system of pipeline conveyor with neat sketches.	13	2	L3
13 (a)	Explain in detail Maintenance Principle of Materials Handling with suggested practices for a belt conveyor system handling lignite in open cast mine	13	3	L3
OR				
13 (b)	Explain in detail of design aspects of belt conveyor system and selection criteria for driving pulleys, belt carcass and idlers.	13	3	L3
14 (a)	Describe the parts of airlift belt conveyor system with neat sketch, highlighting the advantages and limitations of its usage in the field.	13	4	L4
OR				
14 (b)	Describe the parts of sidewall high angle conveyor system with neat sketch, highlighting the advantages and limitations of its usage in the field.	13	4	L4
15 (a)	Describe in detail of technical specifications, characteristics and scope of field application of crane trolley with neat sketches.	13	5	L3
OR				
15 (b)	Write short notes on (i) Wharf crane (ii) Derricks	8 5	5	L3

PART- C (1x 15=15 Marks)

(Q.No.16 is compulsory)

Q.No	Questions	Marks	CO	BL
16.	Describe in detail about the stockpile layouts in coal mining industry with stacking methods. Also, discuss the working and construction features of stackers.	15	1	L5

