B.E. Mining Engineering Eighth Semester

MN8041 - Elective-I : Clean Coal Technologies

P. Pages : 2 **GUG/W/18/2085**

Time : Three Hours * 1 5 9 7 * Max. Marks : 80

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.
4. Weightage to the question indicated on its right.

1. a) Enlist main coalfield regions of India along with their typical of features and characteristics. **8**

b) Give a detailed classification of Indian walls based on Rank and Grade stating all the parameters and their values. **8**

OR

2. a) Explain with the neat sketch, 'Life Cycle of Coal' in detail. **4**

b) Briefly discuss chemical constituents of coal based on occurrences in India. **4**

c) Discuss in brief Proximate Analysis as a means of determining the distribution of products that are found in coal. State numerical expression for determining each of the products. **8**

3. a) What is coal beneficiation? List out four types of coal beneficiation methods. **3**

b) What is coal cleaning? Compare and contrast coal cleaning and coal beneficiation. **5**

c) Sketch and describe a washing method for coking coal. **8**

OR

4. a) "Power Plant Utilities in India are reluctant to use washed coal" Justify the statement giving reasons and explain them. **7**

b) Briefly explain below mentioned coal preparation techniques used in India: **3x3=9**
Lump washing
Coarse Coal washing and
Fine Coal washing

5. Enlist and briefly explain various technology options available for following categories of CCT: **4x4=16**
- Coal Beneficiation
- Coal combustion
- Coal conversion and
- Post – combustion

OR

6.	a)	What do you understand by the term "Clean Coal technology"? State the necessity of such technologies for developing countries like India.	**4**
	b)	Discuss at length CCS technology as one of the emerging CCT to meet the global emission stabilization targets while meeting the National energy needs.	**8**
	c)	Give a brief description of combined-cycle coal gasification process.	**4**
7.	a)	Discuss at length giving all concerned statistics, the potential of CBM technique in India.	**4**
	b)	List and discuss main impediments in the extraction of CBM reservoirs in India.	**4**
	c)	What is CBM? Discuss in brief formation of CBM.	**4**
	d)	What are the primary sources of methane in coal.	**4**

OR

8.	a)	List out occurrences of methane in India and briefly explain process of its emission.	**4**
	b)	Outline and explain status of CBM extraction in India.	**4**
	c)	Sketch and briefly explain coal bed methane (CBM) technique.	**8**
9.	a)	In case of u/g coal gasification, briefly explain various available methods of establishing linkages between boreholes.	**10**
	b)	Discuss in brief various stages involved in the process of linkage objected at development of u/g gasification generator.	**6**

OR

10.	a)	Sketch and explain in brief non-mining method of u/g coal gasification.	**8**
	b)	Define the following in case of UCG: - Inlet and outlet - Forward Burnup and - Backward burning.	**4**
	c)	Explain in brief hydro-linkage in case UCG.	**4**

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