



## M.Tech. V Semester Degree Examination, April/May - 2024

### MINERAL PROCESSING

#### Coal Preparation and Fuel Technology

#### (NEP)

Time : 3 Hours

Maximum Marks : 70

- Note :**
- (i) Answer **any five** of the following questions.
  - (ii) Each question carries **equal** marks.
  - (iii) Question number **1** is compulsory.

1. (a) Distinguish Insitu theory and Drift theory with regard to the origin of coal. **5**  
(b) Describe the process of prominent analysis of coal. **4**  
(c) Define sink-float analysis and describe the principle behind this method for separating coal particles based on density differences. **5**
2. (a) Explain the heavy media cyclones applied in Coal washing. **5**  
(b) What is Fuel Ratio ? How it is related to rank of a Coal ? **4**  
(c) Discuss the differences between the Blam Jig and the Batac Jig in terms of their operational principles and application in mineral processing. **5**
3. (a) Explain how fine Coal is beneficiated by using oil agglomeration process. **10**  
(b) Discuss the factors that effect the flotation of Coal. **4**
4. What is Combustion ? What are the different Combustion Processes ? What do you mean by smoke, clinker and fly ash that are generated during Combustion Process ? **14**
5. What is Coke ? Describe the tests used to determine the properties of metallurgical Coke. **14**
6. Describe the Chance Cone process with a neat sketch including medium recovery system. What are the advantages of this process ? **14**



- 7.** Describe the standard tests for determination of the following. **14**
- (a) Free Swelling Index
  - (b) Caking Index
  - (c) Roga Index
  - (d) Grayking Low Temperature Carbonization Assay
- 8.** (a) With the help of a neat sketch, describe the construction of Batic Jig, label the parts and describe the jigging process. **8**
- (b) Discuss the Non-coking coals beneficiation in detail. **6**

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