**MET-302-FUELS TECHNOLOGY (C-14)**

**BIFURCATION FOR UNIT TESTS**

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| --- | --- | --- | --- |
| **S.NO.** | **MAJOR TOPICS** | **SHORT TYPE** | **ESSAY TYPE** |
| **UNIT TEST-I** |
| 1 | IMPORTANT INDUSTRIAL FUELS | 1 | 1 |
| 2 |  GASIFICATION OF FUELS | 1 | 1 |
| 3 | FIRING OF FUELS & PULVERIZATION | 1 | 1 |
| **UNIT TEST-II** |
| 4 | COMBUSTION OF FUELS | 1 | 1 |
| 5 | NON-CONVENTIIONAL FUELS | 1 | 1 |
| 6 | NUCLEAR FUELS | 1 | 1 |

**UNIT TEST-I**

**MET-302-FUELS TECHNOLOGY (C-14)**

**MODEL PAPER-I**

 **PART-A 3\*2=6**

***Note : Answer all questions and each question carries 2 marks***

1. Define flash point and fire point
2. Define gasification and state the pupose of gasification
3. List out the types of solid fuel firing

 **PART-B 2\*7=14**

***Note : Answer any two of the following questions and each question carries 7 marks***

1. With the help of neat sketch explain about the production of coke from Beehive oven process
2. Explain about the production of water gas with a sketch
3. (a) What is the purpose of atomisation

(b) List the types of gas burners

**UNIT TEST-I**

**MET-302-FUELS TECHNOLOGY (C-14)**

**MODEL PAPER-II**

 **PART-A 3\*2=6**

***Note : Answer all questions and each question carries 2 marks***

1. Define calorific value and combustion
2. Give the composition of water gas
3. List the advantages of pulverized fuel

 **PART-B 2\*7=14**

***Note : Answer any two of the following questions and each question carries 7 marks***

1. With the help of neat sketch explain about the production of coke from Byproduct coke oven process
2. Explain about the production of producer gas
3. (a) List the advantages and limitations of pulverized fuel

(b) What are the industrial applications of pulverized fuel?

**UNIT TEST-II**

**MET-302-FUELS TECHNOLOGY (C-14)**

**MODEL PAPER-I**

 **PART-A 3\*2=6**

***Note : Answer all questions and each question carries 2 marks***

1. A sample of coal consists of C=60%, O=33%, H=6%, S=0.5%, N= 0.3% and Ash =0.2% ; Calculate the Higher Calorific Values of the fuel, assuming the latent heat of water vapour is 587 Kcal/Kg.
2. Classify the non conventional energy resources
3. Give the ores of Uranium with its chemical formulas

 **PART-B 2\*7=14**

***Note : Answer any two of the following questions and each question carries 7 marks***

1. Calculate the percentage composition by mass of the dry products combustion assuming air is a mixture of Oxygen (21%) and Nitrogen (79%), when Kilogram of the oil is burnt completely by supplying 20% excess air. The oil contains 85% Carbon and 15% Hydrogen.
2. Explain about the construction of solar panel
3. With the help of flow chart explain about the production of uranium from beach sands

**UNIT TEST-II**

**MET-302-FUELS TECHNOLOGY (C-14)**

**MODEL PAPER-II**

 **PART-A 3\*2=6**

***Note : Answer all questions and each question carries 2 marks***

1. A sample of coal consists of C=52%, O=26%, H=4%, S=0.2%, N= 0.5% , Calculate the Lower Calorific Values of the fuel, assuming the latent heat of water vapour is 587 Kcal/Kg.
2. What are the applications of solar energy
3. List the applications of nuclear fuels

 **PART-B 2\*7=14**

***Note : Answer any two of the following questions and each question carries 7 marks***

1. Volumetric analysis of a sample flue gas is 10.5%-CO2,0.5%-CO,8%-O2 and 81%-N2 .Determine the gravimetric analysis of the flue gas
2. Explain about the working of wind mill
3. With the help of flow chart explain about the production of plutonium

**MODEL PAPER – I** C-14-MET-302

**BOARD DIPLOMA EXAMINATIONS**

**D.MET.E-III SEMESTER EXAMINATIONS**

**FUELS TECHNOLOGY**

Time : 3 Hours Total Marks :80

 **PART – A** 10 × 3 = 30

***Instructions***  : (1) Answer any ***five*** questions and each question carries

 ***twelve*** marks

 (2) The answer should be brief and straight to the point

 and shall not exceed ***five*** simple sentences

1. Define flash point and fire point

2. Distinguish between proximate analysis and ultimate analysis

3. What are the uses of blast furnace gas?

4. List out the types of solid fuel firing

5. What is the necessity of pulverisation of fuel?

6. A sample of coal consists of C=56%, O=32%, H=8%, S=0.2%, Calculate the Higher and Lower Calorific Values of the fuel, assuming the latent heat of water vapour is 587 Kcal/Kg.

7. List out non conventional energy resources

8. What are the applications of solar energy ?

9. List the types of nuclear fuels

10.State the important rocket fuels

**PART – B** 5 × 10 = 50

***Instructions***  : (1) Answer ***all*** questions and each question carries

 ***three*** marks

 (2) The answers should be comprehensive and the

 criteria for valuation is the content but not the

 length of the answer

11. Explain about the production of coke from Byproduct coke oven process with neat sketch

12. Explain about the production of producer gas

13. Explain about the manufacture of carburetted water gas

14. (a) What is the necessity of pulverization of fuel?

 (b) List the advantages and limitations of pulverized fuel

15. Volumetric analysis of a sample flue gas is 12.5%-CO2,0.95%-CO,%-O2 and 1.8%-CH4 .

 And 78.75%-N2.Determine the gravimetric analysis of the flue gas

16. Calculate the percentage composition by mass of the dry products combustion assuming air is

 a mixture of Oxygen (23%) and Nitrogen (77%), when Kilogram of the oil is burnt

 completely by supplying 20% excess air. The oil contains 84% Carbon and 16% Hydrogen.

17. Explain about the constuction of solar panel

18. With the help of flow chart explain about the production of uranium from beach sands

**MODEL PAPER – II**  C-14-MET-302

**BOARD DIPLOMA EXAMINATIONS**

**D.MET.E-III SEMESTER EXAMINATIONS**

**FUELS TECHNOLOGY**

Time : 3 Hours Total Marks :80

 **PART – A** 10 × 3 = 30

***Instructions***  : (1) Answer any ***five*** questions and each question carries

 ***twelve*** marks

 (2) The answer should be brief and straight to the point

 and shall not exceed ***five*** simple sentences

1. Classify the fuels

2. Differentiate between low temparature carbonisation and high temparature carbonisation

3. Give the composition of coke oven gas

4. List the types of liquid fuel burners

5. What are the advantages of pulverised fuel

6. A sample of coal consists of C=62%, O=28%, H=4%, Calculate the Higher and Lower Calorific Values of the fuel, assuming the latent heat of water vapour is 587 Kcal/Kg.

7. State the necessity of non conventional energy resources

8. List out different types of wind mills

9. Give the ores of Uranium with its chemical formulas

10.List the types of rocket fuels

**PART – B** 5 × 10 = 50

***Instructions***  : (1) Answer ***all*** questions and each question carries

 ***three*** marks

 (2) The answers should be comprehensive and the

 criteria for valuation is the content but not the

 length of the answer

11. With a neat sketch explain about the production of coke from Beehive oven process

12. Explain about the production of water gas with a neat sketch

13.(a) What is the purpose of gasification?

 (b) Give the composition of blast furnace gas and list the uses of it.

14. (a) List the types of solid fuel firing

 (b) What are the advantages and limitations of hand firing and mechanical firing of solid fuels

15. Volumetric analysis of a sample flue gas is 12.5%-CO2,0.95%-CO,%-O2 and 1.8%-CH4 .

 And 2.5%-C2H2.Determine the gravimetric analysis of the flue gas

16. Percentage analysis by weight of a flue gas CO2-16%,CO-0.95% and O2-7.6%.Determine the

 volumetric analysis of the sample.

17. Explain about the working principle of wind mill

18. Explain about the manufacture of plutonium with a flowchart