



Question Paper For Internal Assessment Examination (Theory) - Credit 4 / 28 /

Instructions for Students/Faculty Mid Term I (Total 80 Marks, 2 HRS. Syllabus from Unit-1)

- Part A: Total number of questions to be given are ten (5 from CO1 and 5 from CO2), each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer**), no objective type or fill in the blanks. Total 20 marks.
- Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2). They are long answer type (**Not More Than 50 Words for Question**), each carrying 5 marks. Total 20 marks.
- Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2). They are numerical answer type / fully elaborative type (**Not More Than 70 Words for Question**) *, each carrying 10 marks. Total 40 marks.

Mid Term II (Total 120 Marks, 2.5 HRS., Syllabus from Unit-2)

- Part A: Total number of questions to be given are ten (5 from CO3 and 5 from CO4), each carrying 4 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer**), no objective type or fill in the blanks. Total 40 marks.
- Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4). They are long answer type (**Not More Than 50 Words for Question**), each carrying 7 marks. Total 28 marks.
- Part C: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**) *, each carrying 13 marks. Total 52 marks.

Mid Term III (Total 120 Marks, 2.5 HRS., Syllabus from Unit-3)

- Part A: Total number of questions to be given are ten (5 from CO5 and 5 from CO6), each carrying 4 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer**), no objective type or fill in the blanks. Total 40 marks.
- Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student must answer four (2 from CO5 and 2 from CO6). They are long answer type (**Not More Than 50 Words for Question**), each carrying 7 marks. Total 28 marks.
- Part C: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student must answer four (2 from CO5 and 2 from CO6). They are numerical answer type / fully elaborative type (**Not More Than 70 Words for Question**) *, each carrying 13 marks. Total 52 marks.

* LIST OF ELABORATIVE THEORY QUESTION SUBJECTS: NO SUBJECT UNDER CREDIT FOUR

Instructions For Faculties:

There should be total 6 Course Outcomes (COs) for each subject.

- Mid Term Question Papers are to be submitted as per Course Outcomes (COs) which should be divided equally in Part A, Part B and Part C according to Mid Term Examination and Credit Point.
- In Mid Term-1, the questions are to be given from CO1 and CO2. In Mid Term-2, the questions are to be given from CO3 and CO4. Similarly, in Mid Term-3, the questions are to be given from CO5 and CO6.



- FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'C' OF QUESTION PAPER**

INSTRUCTION FOR STUDENTS

- STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION.**

QUESTION PAPER AND STUDENTS DETAILS

Type of Exam	Mid Term 3	Date of Submission	04/03/2021
Name of Faculty	Ms. Vijay Laxmi	Date of Examination	08/03/2021
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 1
Batch	Twenty-first (21)	Subject	1 FY2 - 03 Engineering Chemistry (Cr 4)

COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPER**(Faculties are required to mention relevant Course Outcome number against the respective question in QP)**

Course Outcome	CO 5. Identify the fuels, their calorific values, cracking, knocking. CO 6. Classify the types of fuels based on calorific value for selected applications.		
Email I'd	vijaylaxmi@soaneemrana.org	Phone No.	931-120-9015
Student Name		Student Reg No.	

Part A**All the questions are compulsory to attend.****1. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.**

5

Question : 1	Explain the theories of origin of petroleum.		
35	Organic Fuel	N.K.Engg Chemistry	
Question : 2	Give a reactions involved in cracking petroleum.		
36	Organic Fuel	N.K.Engg Chemistry	
Question : 3	Define Fractional distillation of petroleum ? List out the names of the products obtain in fractional distillation.		
35	Organic Fuel	N.K.Engg Chemistry	
Question : 4	Give a chemical reaction of dehydrogenation cyclohexane into benzene.		
35	Organic Fuel	N.K.Engg Chemistry	

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Question : 5	How coal is classified? List out the different types of fuel with examples.		
31	Organic Fuel	N.K.Engg Chemistry	
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			6
Question : 6	How anthracite is different from bituminous coal? Write composition of Anthracite coal.		
31	Organic Fuel	N.K.Engg Chemistry	
Question : 7	Describe peat coal and lignite coal? Write in details, how Bituminous coal is superior than lignite.		
31	Organic Fuel	N.K.Engg Chemistry	
Question : 8	Explain the coalification of coal.		
32	Organic Fuel	N.K.Engg Chemistry	
Question : 9	Define proximate analysis of coal? Explain its importance of proximate analysis of coal.		
32	Organic Fuel	N.K.Engg Chemistry	
Question : 10	Define ultimate analysis of coal? Explain its importance of ultimate analysis of coal.		
33	Organic Fuel	N.K.Engg Chemistry	
Part B			
<p>FOR MIDTERM 1 - Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).</p> <p>FOR MIDTERM 2 - Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).</p> <p>FOR MIDTERM 3 - Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).</p>			
3. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			5
Question : 1	Differentiate between High temperature and low temperature carbonization of coal ?		
34	Organic Fuel	N.K.Engg Chemistry	
Question : 2	Illustrate the principle of Bomb Calorimeter ? Draw the structure of Bomb Calorimeter and Label it.		
33	Organic Fuel	N.K.Engg Chemistry	
Question : 3	Explain the beehive method of carbonization of coal?		
36	Organic Fuel	N.K.Engg Chemistry	
4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			6



Question : 4	a. A gas used in an internal combustion engine had, 40% of H ₂ , 30% of CH ₄ , 17 % of Co, 5% of N ₂ , 3% of C ₂ H ₈ , 5% of C ₂ H ₂ . Find the volume of air needed for combustion of gas. If air supplies 45% excess, find the volume analysis of dry products. b. How the calculation is done for HCV and LCV ?		
40	Organic Fuel	N.K.Engg Chemistry	
Question : 5	Discuss the advantages of catalytic cracking ? Explain mechanism of catalytic cracking reactions.		
37	Organic Fuel	N.K.Engg Chemistry	
Question : 6	Explain the working of Bergius process ? Draw labelled diagram of Bergius process.		
38	Organic Fuel	N.K.Engg Chemistry	
Question : 7 (Old Pattern)			

Part C

FOR MIDTERM 1 - Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).

FOR MIDTERM 2 - Part C: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).

FOR MIDTERM 3 - Part C: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).

5. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.

5

Question : 1	a. Explain the construction and working of Junker calorimeter with neat label diagram ? b. A gaseous fuel was burn in Junker's calorimeter to find out HCV and LCV Following data obtained Vol. of gaseous fuel burnt in certain time = 0.1mt cube Vol. of water collected in certain time = 20kg Vol. of steam collected in certain time = 0.020 kg Temp. of inlet = 30 degree c Temp. of outlet = 30°C		
39	Organic Fuel	N.K.Engg Chemistry	
Question : 2	Numerical problem- find the attachment		
38	Organic Fuel	N.K.Engg Chemistry	
Question : 3	a. Explain about the manufacture of coal gas with neat labelled diagram ? b. A coal sample on an analysis having a following by weight C= 85%, O= 2.5%, N= 1.0% ; ash = 3.0%. Calculate minimum amount air by weight required for complete combustion of 2.5 kg of coal.		
40	Organic Fuel	N.K.Engg Chemistry	
6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			6



Question : 4	<p>a. What do you understand by catalytic reforming of straight run gasoline ? Explain the moving bed catalytic reforming with labelled diagram ?</p> <p>b. Sample of coal containing C=75%, HYDROGEN (H) =8%, OXYGEN (O) =7.5%, S=5.0% and rest is ash. Now calculate the gross and net calorific value of coal.</p>		
37	Organic Fuel	N.K.Egg Chemistry	
Question : 5	<p>Explain the process of determination of Nitrogen in coal sample by Kjeldahl process with labelled diagram.</p>		
35	Organic Fuel	N.K.Egg Chemistry	
Question : 6	<p>Define cracking of gasoline ? Explain its methods of cracking of gasoline.</p>		
35	Organic Fuel	N.K.Egg Chemistry	
<p>Upload Scanned Document In Case of Numerical or Diagram For Any of The Above Questions. (Mention question number with relevant fig / numerical / equations. Max 150 KB)</p>		<p>https://form.123formbuilder.com/upload_dld.php?fileid=eb8f376f2da69f1e49c27a704e072960</p>	
<p>I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.</p>			
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