BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2023)

CLASS: **BTECH** **SEMESTER : SP/2023**
BRANCH: **PROD** **SESSION : FN/AN**

SUBJECT: ME301 INTERNAL COMBUSTION ENGINE & GAS TURBINE

TIME: **02 Hours** **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Derive an expression for the efficiency and work output for an IC engine based on Otto cycle.	[5]	CO1	2
Q.2(a)	Explain how diesel is extracted by the distillation process of crude oil.	[2]	CO1	1
Q.2(b)	Compare between SI engine and CI engine. What is the importance of valve timing diagrams?	[3]	CO2	2
Q.3(a)	Discuss about the three broad regions of combustion process in SI engine in brief.	[2]	CO1	1
Q.3(b)	Draw a graph and explain relating the average flame speed as a function of air fuel ratio for gasoline type fuel.	[3]	CO2	2
Q.4(a)	What is meant by knocking in engine? Explain in brief.	[2]	CO2	2
Q.4(b)	Retarding ignition timing, High octane fuel use and low compression ration could be the reasons to reduce knocking in engine. Explain.	[3]	CO2	3
Q.5(a)	There is some delay in combustion in the CI engine, explain why?	[2]	CO2	2
Q.5(b)	Write notes on Ignition lag and factors affecting Ignition lag.	[3]	CO3	3

::::::28/02/2023::::::M