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

CLASS: BTECH **SEMESTER: V**
BRANCH: MECHANICAL **SESSION: MO/2024**

SUBJECT: ME301 I.C. ENGINES AND 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	Sketch the Otto cycle on p-V and T-s diagrams. Also derive the expression for air standard efficiency and work output.	[5]	1	3
Q.2	A Diesel cycle operates at a pressure of 1 bar at the beginning of compression and the volume is compressed to 1/16 of the initial volume. Heat is supplied until the volume is twice that of the clearance volume. Calculate the mean effective pressure of the cycle. Take $\gamma = 1.4$.	[5]	1	4
Q.3	Define ignition lag, also discuss the various factors which affects Ignition Lag.	[5]	2	2
Q.4	With the support of pressure – crank angle diagram, explain the various stages of combustion in C.I. engines	[5]	2	4
Q.5	With neat sketch explain the theoretical and actual valve timing diagram of Spark ignition engine.	[5]	2	2

::::::18/09/2024::::::M