MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM – 686 666.
(GOVERNMENT AIDED AUTONOMOUS ENGINEERING COLLEGE)

DEPARTMENT OF MECHANICAL ENGINEERING

FIRST SESSIONAL EXAMINATION, NOVEMBER 2024
S1 MA & MB BATCH

B24ES1T05B - BASIC CIVIL AND MECHANICAL ENGINEERING (B)

Time –45 min **Max: 20 Marks**

PART-A
Answer All Questions.

1.	Explain air standard Carnot cycle with PV diagram and derive its efficiency?	**CO 4**	**3 Marks**
2.	Differentiate between C.I and S.I. engine.	**CO 4**	**3 Marks**

PART - B
Answer All Questions.

3a.	Explain and derive an expression for the efficiency of Otto cycle.	**CO 4**	**7 Marks**
3b.	A gas engine working on ideal Otto cycle has a compression ratio of 6. The pressure and temperature at the commencement of compression are 1 bar and 27°C. The heat supplied during the constant volume combustion process is 1200 kJ/kg. Determine the peak pressure and temperature, work output per γkg of air and air-standard efficiency. Assume cv= 0.718 kJ/kg.K and γ = 1.4 for air.	**CO 4**	**7 Marks**

Vision

Mentoring to Ensure Excellence

Mission

To facilitate comprehensive and integrated development of students by providing quality education that encourages sustainable practices.

To mould disciplined and socially committed engineers capable of assuming professional leadership upholding national integrity.