Code No.: ME403PC | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–II–Semester End Examinations (Supply) - February- 2024
THERMAL ENGINEERING-I
(MECH)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a)	Differentiate between two stroke and four stroke engines.	[2M]
b)	State any two functions of lubrication system.	[2M]
c)	What is abnormal combustion?	[2M]
d)	Classify SI engine combustion chambers.	[2M]
e)	Where is frictional power accounted in heat balance sheet?	[2M]
f)	Define specific fuel consumption.	[2M]
g)	Define polytropic efficiency of axial flow compressor.	[2M]
h)	What is the function of diffuser in centrifugal compressor?	[2M]
i)	Define pressure ratio for simple gas turbine plant.	[2M]
j)	Define the Efficiency of Gas Turbine plant.	[2M]

PART-B **(50 Marks)**

2.	Elaborate the advantages and disadvantages of battery ignition systems over Magneto ignition systems with help of neat diagram.	[10M]
	OR	
3.	Differentiate between SI and CI engines with Suitable examples. Also draw the port timing diagram for diesel engines.	[10M]
4.	Discuss the stages of Combustion in SI engines with help of indicator diagram.	[10M]
	OR	
5.	Explain the phenomenon of knock in CI engine with help of diagrams.	[10M]
6.a)	How the compressors are classified.	[3M]
b)	A Single Stage reciprocating air compressor takes in 1.4 kg of air per minute at 1bar and 17^0C and delivers it at 6bar. Assuming compression process follows the law $PV^{1.35}$=constant. Calculate indicated power.	[7M]
	OR	
7.	Explain the methods used to measure Break Power with help of diagrams.	[10M]
8.	Explain the working principle of roots blower and vane blower compressors with a neat sketch.	[10M]
	OR	
9.	Calculate the power required to run the vane compressor and its efficiency when it handles 6 m^3 of air per minute from 1 bar to 2.2 bars. The pressure rise due to compression in the compressor is limited to 1.6 bar take the mechanical efficiency of compressor as 80%.	[10M]
10.	Explain open cycle and closed cycle gas turbines.	[10M]
	OR	
11.	Write about Regeneration, Reheating and Inter cooling of gas turbines.	[10M]

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