

COURSE TITLE : HEAT ENGINES LABORATORY
COURSE CODE : 4027
COURSE CATEGORY : B
PERIODS/ WEEK : 3
PERIODS/ SEMESTER : 45
CREDIT : 2

TIME SCHEDULE

MODULE	TOPIC	PERIODS
1	Study of petrol engines. Valve timing diagrams	10
2	Load test on petrol and diesel engines.	12
3	Viscometer. Flash and fire point apparatus. Calorimeters. Heat Exchanger	11
4	Refrigeration equipments. Air compressor	12
TOTAL		45

COURSE OUTCOME :

Sl.No.	Sub	Student Will Be Able To
1	1	Understand the systems of petrol and diesel engines.
	2	Comprehend the preparation of valve timing diagram.
	3	Appreciate the load test on engine.
2	4	Understand the viscosity, calorific value, flash point, firepoint of fuels & Heat Exchangers
	5	Comprehend the working of refrigeration plant and determine C.O.P.
	6	Understand the working of air compressor.

SPECIFIC OUTCOME

MODULE I

- 1.1 Study the parts and functions of the petrol engine.
- 1.2 Identify the various systems in IC Engines - intake system, exhaust system, lubricating system , cooling system, electrical system, fuel system & loading system
- 1.3 Conduct different tests on petrol engine – load test, heat balance test, valve timing diagram, Morse test.
- 1.4 Compare the values, draw various characteristic curves and obtain economic speed & power.

MODULE II

- 2.1 Study the parts and functions of diesel engine.
- 2.2 Identify the various systems in Diesel Engines - intake system, exhaust system, lubricating system, fuel system, cooling system.
- 2.3 Conducting different tests on diesel engine – load test, heat balance test, valve timing diagram.
- 2.4 Compare the values, draw various characteristic curves and obtain economic speed & power.

MODULE III

- 3.1 Perform the test on lubricating oils.
- 3.2 Determine the viscosity of the given oil.
- 3.3 Determine the flash and fire point of the given oil.
- 3.4 Determine the calorific value of given solid fuels.
- 3.5 Determine the calorific value of the given liquid fuel.
- 3.6 Conduct a test on Parallel and counter flow heat exchanger apparatus.

MODULE IV

- 4.1 Identify the refrigeration plant; study the function of each component.
- 4.2 Performance tests on refrigerators.
- 4.3 Determine the COP of the refrigerator.
- 4.4 Identify the various parts and indicate the functions.
- 4.5 Conduct a test on air compressor and determine volumetric efficiency, isothermal efficiency & adiabatic efficiency

TEXT BOOKS

1. Mechanical Workshop & Laboratory Manual By K. C. John