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## GIET UNIVERSITY, GUNUPUR – 765022

Ph.D. (First Semester) Examinations, January – 2024

### 23SPPEME1012 - Internal Combustion Engines (Mechanical)

Time: 3 hrs

Maximum: 70 Marks

The figures in the right hand margin indicate marks.

**Answer ANY FIVE Questions**

**(14 x 5 = 70 Marks)**

	Marks
1.a. List the various components used in I.C Engine. Discuss in detail about Piston rings and flywheel in I.C Engine.	8
b. Explain briefly that how the torque and Mechanical power are produced in I.C Engine	6
2.a. Explain how the IC engine is constructed and discuss about various operations of 4 stroke diesel engine with suitable diagrams.	8
b. Write the merits and demerits of Two stroke engine over Four stroke engine.	6
3.a. List out the various components of IC Engine and mention the function of each one. List the parameters by which performance of an engine is evaluated .Explain clearly the effect of varying the engine dimensions on the engine output.	8
b. Define a valve in I.C Engine .With a neat sketch explain briefly about Overhead valve mechanism.	6
4.a. Discuss the necessity of cooling system in IC engine. Name the different techniques used for cooling engine. Explain any two.	7
b. Explain briefly about various components used in Water cooling system.	7
5.a. What is importance of lubrication system in I.C Engine? Name the different lubrication systems available .Illustrate the Splash lubrication in I.C Engine.	8
b. Explain about various desired properties of a lubricant .	6
6.a. Name the various components used in a fuel system of C.I Engine and state the purpose of each component	7
b. Explain the terms i) detonation and ii) Pre-ignition. What are the factors affecting detonation? How detonation is prevented	7
7.a. Explain the following with neat sketches : i) Thermo syphon cooling system ii) forced circulation cooling	8
b. What are the measures you suggest to prevent the following troubles in I.C Engine?	6
i ) High Engine Oil consumption ii) Poor Pick up iii) Engine over heat	

8.a. Discuss about

8

i) Oil Pump ii) Relief valve iii) Strainer iv) Engine heat exchanger

b. What are Super charger and Turbocharger? How they are differentiated? Mention their purpose.

6

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