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Code No: 5421AQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech II Semester Examinations, June/July - 2018

ADVANCED I. C. ENGINES

(Thermal Engineering)

Time: 3hrs **Max.Marks:75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 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

5 × 5 Marks = 25

1.a) Explain the importance of ASTM distillation curve. [5]
b) Differentiate Turbo charging and super charging? [5]
c) Discuss the basic differences between the combustion process of S.I. and C.I. engines. [5]
d) What are the causes of smoke in S.I. engine? [5]
e) Discuss the different approaches to measure in cylinder heat transfer. [5]

PART - B

5 × 10 Marks = 50

2.a) Explain and discuss the effects of volatility on: i) starting ii) warming up iii) acceleration.
b) Discuss the effects of operating variables on air fuel mixture requirements. [5+5]

OR

3.a) Explain in brief the structure of petroleum.
b) Give an overview of various engine types and its selection in a given application. [5+5]

4.a) Define Swirl and Squish? Discuss their importance.
b) Discuss any one method of supercharging of I.C. engine. [5+5]

OR

5.a) Why do turbochargers most commonly use radial flow compressors and turbines with non constant pressure supply to the turbine?
b) Why does turbo charging a S.I. engine normally lead to decrease in fuel economy? [5+5]

6.a) Discuss the merits and demerits of open type combustion chambers.
b) Explain the term Delay period as referred to C.I. engines, and its significance. [5+5]

OR

7.a) Explain the ignition limits for various hydrocarbons in S.I. engines.
b) Explain the three stages of combustion in S.I. engines with neat diagrams. [5+5]

8.a) Sketch and explain the various measurement devices used to measure smoke in S.I. engine.

b) Discuss the various methods to control the smoke in C.I. engines. [5+5]

OR

9.a) Give the list of emissions from C.I. engines.

b) With a neat sketch explain the working principle of orsat apparatus. [5+5]

10.a) Sketch and explain the various reasons for cooling the engines.

b) What are the modifications to be made in the existing C.I. engine to use bio fuels in that? [5+5]

OR

11.a) Sketch and explain the conventional liquid cooling system.

b) Differentiate LPG and CNG. [5+5]

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