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No. of Printed Pages : 3

BIMEE-031

DIPLOMA – VIEP – MECHANICAL ENGINEERING (DMEVI)

Term-End Examination

December, 2015

BIMEE-031 : I.C. ENGINES

Time : 2 hours *Maximum Marks : 70*

Note : *Answer any* ***five*** *questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) What are the advantages and disadvantages of a two-stroke cycle engine over a four-stroke cycle engine ? 7

(b) What do you mean by the term "Ignition" ? How is it related with "Combustion" ? What are the requirements of an ignition system for an I.C. engine ? 7

2. (a) What are the functions of the carburettor and fuel injection systems ? 7

(b) What is the importance of lubrication in I.C. engines ? 7

3. (a) An engine having compression ratio of 6 is working on the Otto cycle. The compression ratio is increased from 6 to 7. Compare the change in efficiency due to this. Assume $\gamma = 1{\cdot}4$. 7

(b) The four important temperatures in a diesel cycle are 30° C, 1500° C, 2850° C and 550° C, the last one being obtained at the end of compression. Calculate the air standard efficiency. Assume $\gamma = 1{\cdot}4$. 7

4. (a) Why is a cooling system necessary in an engine ? Compare liquid cooling with air cooling. 7

(b) Explain the phenomena of knocking in an SI engine. What are the different factors which influence the knocking ? 7

5. (a) "Supercharging is preferred in diesel engine than petrol engine." – Justify this statement. 7

(b) What are lean and rich mixtures ? Describe briefly fuel/air ratio requirements in spark ignited petrol engines. 7

6. (a) What do you mean by "Air Pollution" ? What are the main sources of pollutants from petrol engines ? 7

(b) What is scavenging ? Why is scavenging important in two-stroke engines compared to four-stroke engines ? 7