

**DIPLOMA IN MECHANICAL ENGINEERING
(DMEVI)**

Term-End Examination

June, 2014

BIMEE-031 : I.C. ENGINES

01474

Time : 2 hours

Maximum Marks : 70

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- Note :**
- (i) *Answer any seven questions.*
 - (ii) *All questions carry equal marks.*
 - (iii) *Assume missing data, if any.*
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1. (a) With the help of a suitable sketch, explain the working of a 4 - stroke, single cylinder Compression Ignition (CI) engine. **5+5**
(b) A four cylinder engine of a car has 68 mm bore and 75 mm stroke. The compression ratio is 8.0. Calculate cubic capacity of the engine and clearance volume of each cylinder.
2. (a) Compare the relative advantages and disadvantages of 2 - stroke SI engines over 4 - stroke SI engines. **5+5**
(b) Explain the valve timing diagram of a 4 - stroke SI engine.
3. Define and explain ignition delay in SI engines. **10**
Discuss the effect of following variables on flame velocity in SI engines.
 - (a) air-fuel ratio
 - (b) turbulence
 - (c) engine load
 - (d) engine speed

4. (a) What are the functions of a carburettor ? 5+5
Briefly explain the working of a simple carburettor.
(b) Explain the requirement and working process of the idling system of a carburettor.
5. With the help of suitable sketches explain the 10
following types of injection systems for CI engines.
(a) Jerk pump system
(b) Distributor system
6. (a) What are the important points that should 5+5
be borne in mind when considering new CI engine combustion chamber design ?
(b) What are the advantages and disadvantages of compression swirl ?
7. (a) Describe a high tension magnets ignition 5+5
system and compare its advantages and disadvantages with a coil-ignition system.
(b) Why cooling of an internal combustion is necessary ? Why is over-cooling in an engine harmful ?
8. Explain how the following performance 10
parameters are measured in IC engines.
(a) mechanical efficiency
(b) power out put
9. Explain various reasons for CO, HC and NO_x 10
emissions in SI engines.
10. Write short notes on **any two** of the followings :
(a) emission norms 5x2=10
(b) maintenance of radiator
(c) heat balance sheet of CI engines
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