

# C.U.SHAH UNIVERSITY

## Summer Examination-2017

**Subject Name: Automobile Engines**

**Subject Code: 4TE04AEN1**

**Branch: B.Tech. (Automobile)**

**Semester: 4**

**Date: 11/05/2017**

**Time: 02:00 To 05:00**

**Marks: 70**

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
  - (2) Instructions written on main answer book are strictly to be obeyed.
  - (3) Draw neat diagrams and figures (if necessary) at right places.
  - (4) Assume suitable data if needed.
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- Q-1 Attempt the following questions: (14)**
- a) If the temperature of intake air in internal combustion engine increases, then its efficiency will (1)  
(A) Remain same (B) Decrease (C) Increase (D) None of these
  - b) The ignition quality of petrol is expressed by (1)  
(A) Cetane number (B) Octane number (C) Calorific value (D) All of these
  - c) In compression ignition engines, swirl denotes a (1)  
(A) Haphazard motion of the gases in the chamber  
(B) Rotary motion of the gases in the chamber  
(C) Radial motion of the gases in the chamber  
(D) None of the above
  - d) The knocking in spark ignition engines can be reduced by (1)  
(A) Retarding the spark (B) Increasing the engine speed  
(C) Both (A) and (B) (D) None of these
  - e) A stoichiometric air-fuel ratio is (1)  
(A) Chemically correct mixture (B) Lean mixture  
(C) Rich mixture for idling (D) Rich mixture for over loads
  - f) A supercharged engine as compared to an ordinary engine (1)  
(A) Requires smaller foundation (B) Is lighter  
(C) Consumes less lubricating oil (D) All of these
  - g) Scavenging is usually done to increase (1)  
(A) Thermal efficiency (B) Speed (C) Power output (D) Fuel consumption
  - h) The cross section area of once cylinder of an engine multiplied by its stroke is called..... (1)
  - i) In thermosyphon system there is (are) (1)  
(A) no pump (B) one pump (C) two pumps (D) three pumps



- j) The following is considered as best antifreeze solution (1)  
 (A) Ethylene glycol (B) Distilled glycerine  
 (C) Methanol (D) Denatured alcohol
- k) Blow by gases are emitted by (1)  
 (A) PCV (B) Air pump (C) Fuel tank (D) Cooling water pump
- l) EGR system is employed for controlling emissions of (1)  
 (A) HC (B) CO (C) NO (D) HC and CO
- m) Morse test is used to determine the I.P. of a (1)  
 (A) Single cylinder petrol engine (B) Four stroke engine  
 (C) Single cylinder diesel engine (D) Multi cylinder engine
- n) An engine indicator is used to determine the following (1)  
 (A) Speed (B) m.e.p. and I.H.P. (C) Volume of cylinder (D) Temperature

**Attempt any four questions from Q-2 to Q-8**

- Q-2 Attempt all questions (14)**  
 (a) Explain valve timing diagram of four strokes Diesel Engine with neat sketch. (7)  
 (b) Write a short note on Firing Order in brief with neat sketch. (7)
- Q-3 Attempt all questions (14)**  
 (a) Explain in detail about MPFI system used in SI engine with neat sketch. (5)  
 (b) Explain CRDI system with neat sketch. (5)  
 (c) Desirable properties of good I. C. Engine Fuels. (4)
- Q-4 Attempt all questions (14)**  
 (a) Explain carter carburettor with neat sketch. (7)  
 (b) Explain types of nozzles used in IC engine with neat sketch. (7)
- Q-5 Attempt all questions (14)**  
 (a) Explain stages of combustion in CI engine. (7)  
 (b) Abnormal combustion knock produced by surface ignition in SI engine is more harmful than normal combustion knock- Justify the statement. (7)
- Q-6 Write short notes on: (14)**  
 (a) Catalytic converters with neat sketch. (5)  
 (b) Forced Circulation Cooling system with neat sketch. (5)  
 (c) MIST Lubrication System. (4)
- Q-7 Attempt all questions (14)**  
 (a) Explain types of superchargers in detail with neat sketch. (7)  
 (b) What is meaning of Pulse turbo-charging? What are its advantages and (7)



disadvantages?

**Q-8**

**Attempt all questions**

**(14)**

- (a) Which are the various methods of measurement of friction power and explain extrapolation method to measurement of friction power? **(5)**
- (b) Which are the various methods of measurement of brake power and explain any one method to measurement of brake power? **(5)**
- (c) Explain Morse Test to measurement of indicated power. **(4)**

