

www.FirstRanker.com

www.FirstRanker.com



Total No. of Questions : 18

Total No. of Pages : 02

B.Tech. (Automobile Engineering) (Sem.-5) AUTOMOTIVE PETROL AND DIESEL ENGINES Subject Code : BTAE503-18

M.Code: 78227

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTION TO CANDIDATES :

- SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks 1. each.
- SECTION-B contains FIVE questions carrying FIVE marks each and students 2. have to attempt any FOUR questions.
- SECTION-C contains THREE questions carrying TEN marks each and students 3. have to attempt any TWO questions.

SECTION-A

Answer briefly :

- Sketch P-V and T-S diagram of Diesel cycle. 1)
- 2) Define air standard efficiency.
- Define Octane and Cetane number. 3)
- er.com 4) Why very rich mixture is required for Idling?
- 5) Discuss the requirements of an Ideal injection.
- 6) Define mean effective pressure and stoichiometric air fuel ratio.
- 7) Explain the function of combustion chamber.
- 8) What are two basic types of internal combustion engines?
- 9) Why supercharging of CI engines is done?
- 10) List a few anti-knock agents commonly added to gasoline.



www.FirstRanker.com

SECTION-B

- 11) Define and explain the relation between :
 - a. Mechanical efficiency
 - b. Brake thermal efficiency.
- 12) An engine working on Otto cycle has the following conditions: Pressure at the beginning of compression is 1 bar and pressure at the end of compression is 11 bar. Calculate the compression ratio and air-standard efficiency of the engine. Assume $\gamma = 1.4$.
- 13) Compare SI and CI engines with respect to :
 - a. basic cycle
 - b. compression ratio
 - c. fuel used
 - d. fuel injection
- 14) Discuss the effect of spark advance on the performance of an Otto cycle engine. What is meant by the optimum spark advance?
- 15) How does exhaust temperature and mean effective pressure affect the engine performance? Explain.

SECTION-C

- 16) A petrol engine working on Otto cycle has an maximum pressure of 50 bar. Heat supplied is 1000 kJ/kg. If the pressure ratio during compression 12.286, find the compression ratio and also the ratio of peak temperature to inlet temperature. Take p1 = 1 bar and $T1 = 27 \circ C$.
- 17) Draw the Carnot cycle on p-V and T -s diagrams. Derive an expression for its efficiency. Comment on the significance of this result as it related to source and sink temperature.
- 18) *"Factors tending to increase detonation in SI engines tend to reduce knock in CI engines"* Comment on this statement considering delay period and flames front speed.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

2 M-78227

(S2)-109