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**Question Paper Code:49720**

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2018

Elective

Mechanical Engineering

14UME920 – ADVANCED I.C ENGINES

(Regulation 2014)

Duration: 3 Hours

Maximum: 100 Marks

PART - A (10 x 1 = 10 Marks)

(Answer all Questions)

1. The cold engine is started, it requires a \_\_\_\_\_ mixture. CO1- R  
(a) leaner                      (b) richer                      (c) chemically equal                      (d) none mentioned
2. The air standard efficiency of an Otto cycle compared to diesel cycle for the given compression ratio is CO1- R  
(a) more                      (b) same                      (c) less                      (d) depending on power rating
3. The pressure at the end of compression in the case of diesel engine is of the order of CO2- R  
(a) 20 kg/cm                      (b) 6 kg/cm                      (c) 12kg/cm                      (d) 35 kg/cm
4. Combustion in compression ignition engines is CO2- R  
(a) homogeneous                      (b) turbulent                      (c) heterogeneous                      (d) laminar

5. The following is not one of the major pollutants. CO3- R  
(a) nitrogen oxides (b) carbon di-oxide  
(c) carbon monoxide (d)unburned hydro carbon
6. The major contributor of Carbon monoxide is CO3- R  
(a) motor vehicle (b) industry (c)stationary combustion (d) none of the /above
7. The advantage of gaseous fuel is that CO4- R  
(a) can be stored easily (b) can mix easily with air  
(c) can displace more air from the engine (d) all of the mentioned
8. The C.I. engines alternative fuel most preferred are CO4- R  
(a) aromatics (b)olefins (c) napthenes (d) paraffins
9. The most accurate gasoline injection system is CO5- R  
(a) direct injection (b)throttle injection (c) port injection (d)manifold injection
10. The effective inhibitor of pre-ignition is CO5- R  
(a) alcohol (b) lead (c) water (d)none mentioned

PART – B (5 x 2= 10Marks)

11. Define normal combustion. CO1- R
12. List the factors affecting the delay period. CO2- R
13. Identify the materials used as catalyst in IC engines. CO3- R

14. Rank the advantages of hydrogen as alternate fuel in IC engine CO4- R
15. Show the reason why lean mixture is preferred in SI engine. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Explain briefly the process of normal combustion in SI engines. CO1- App (16)
- Or
- (b) Narrate the factors that affect the flame propagation in SI engine. CO1- App (16)
17. (a) Demonstrate briefly about the knocking in CI engine with help of Time Vs Pressure curve and factors influencing knocking in combustion CO2- App (16)
- Or
- (b) Explain with schematic sketch the working of a turbo charger and list its advantages CO2- Ana (16)
18. (a) Discuss in detail about the working of a catalytic converter. CO3- Ana (16)
- Or
- (b) Explain Indian driving cycle with any one sample diagram CO3- Ana (16)
19. (a) Describe the relative merits of using hydrogen as an alternate fuel in SI and CI engines and justify. CO4- U (16)
- Or
- (b) Explain alcohols is substitute for IC engine to petroleum product fuels CO4- Ana (16)
20. (a) Discus about homogeneous charge compression ignition system with neat sketch. CO5- U (16)
- Or
- (b) Describe about common rail direct injection system with neat sketch. CO5- U (16)

