Department of Aeronautical and Automobile Engineering
End Sem Exam AAE 4074-PE V
Automotive Pollution Control (Scheme) (23.12.2022)

Q1. What are the cause and effects of Hydrocarbon, Carbon monoxide and NOx on human being? (3)

Q2. Explain the formation of white, black and blue smoke in automotive. List the factors, which contributes in the formation of smoke (4)

Q3. What are the effects of the following operating variables on the formation of pollutants such as hydrocarbons and carbon monoxide in SI engine: (i) AF ratio (ii) Spark timing (iii) Engine speed (3)

Q4. Explain with a neat sketch, constructional and operational details of Alkaline fuel cells. Write its advantages and disadvantages. (5)

Q5. Discuss the operational details and important features of three-way catalytic converter system. What are the advantages of this system? (3)

Q6. Explain with a valid reason, the effect of varying compression ratio and blending of bio ethanol on the formation of hydrocarbon pollutant, during increase in the engine load (2)

Q7. Explain with a neat sketch, cause and effects of over mixing phenomenon of charge. Identify in which engine this phenomena occurs? (4)

Q8. Explain with neat sketch operational features of various zones of Up draft gasifier (4)

Q9. It is understood that the CO emission decreases as the hydrogen percentage in the fuel blend increased during idling of Spark Ignition engine. Justify (2)

Q10. Discuss with a neat characteristic curve, European Emissions Test Driving Cycle details (ECE–15), which is repeated four times (4)

Q11. Define Homogeneous Charge Compression Ignition technology. What are the features of this technology? HCCI challenges both the S.I and C.I Engines. Justify the statement. (4)

Q12. Illustrate with a neat sketch, functional details of continuous filter type smoke meter (2)

Q13. Identify and explain with a neat sketch, constructional and functional details of the instrument recommended in measuring CO / CO2 (5)

Q14. Describe the following terminologies with example: i) Auto ignition ii) Pre ignition iii) Self ignition (3)

Q15. NOx is less in both leaner and richer zone in SI engine. Justify (2)

1, 7 – 3,4

2, 8 – 4,3

3, 4 – 4,

4, 8 – 3, 5

5, 23 – 5,2,4,4,2,2,3,2