[Total No. of Questions - 9] [Total No. of Printed Pages - 2]
(2066)

16104(J) June-16

B. Tech 6th Semester Examination

Automotive Pollution & Control (NS)

AU-322

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, select one question from each section A, B, C and D. Section E (question 9) is compulsory. All questions carry equal marks. Use of non-programmable calculator is permitted. Assume any suitable data if not given.

SECTION - A

1. Describe various sources of pollutants. Explain the formation of HC and CO in Spark Ignition engines. (20)

2. Describe the effects of operating variables on emission formation in SI engines. (20)

SECTION - B

3. What are various toxic air contaminants in diesel engine exhaust? Describe in detail the particulate emission and its effects. (20)

4. Describe various techniques used for post combustion treatment for diesel engines to reduce pollution and increase efficiency of the engines. (20)

SECTION - C

5. (a) Describe the construction and working of a thermal reactor. (10)

(b) Discuss the engine design modifications required for the control of unburned hydrocarbon emissions. (10)

6. What are the various test procedures for emission measurement? Explain the construction and working of a flame ionization detector. (20)

SECTION - D

7. Explain the emission norms for both petrol and diesel engines based on Bharat stage IV. Which region/cities are at present covered by Bharat stage IV norms. (20)

8. (a) What is meant by driving cycle for emission testing? Why is this so important? (10)

   (b) What regulatory test procedures are used for exhaust gas pollutants and particulate pollutants as per Europe standards? (10)

SECTION - E

9. (i) What is the effect of load and spark timing on HC and NO emissions?

   (ii) What is reason for carbon monoxide formation in SI engines?

   (iii) Draw the efficiency curve for a catalytic converter with respect to air/fuel ratio.

   (iv) Write limitations of Chemiluminescent detector.

   (v) What is meant by evaporative emission control?

   (vi) What is the difference between the exhaust gas constituents of a petrol engine and diesel engine?

   (vii) What is driving cycle?

   (viii) What is a catalyst ?

   (ix) What is a smoke meter?

   (x) What is the Indian Emission Standard being used in most of India? (2×10=20)