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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi) Eighth Semester, B.E. - Automobile Engineering

Semester End Examination; Aug. / Sep. - 2020

Automatic Air Pollution and Control Max. Marks: 100 Time: 3 hrs Note: i) Answer TWO full questions, selecting ONE full question from UNIT - I and UNIT - II. ii) Answer any THREE full questions, choosing from UNIT - III, UNIT - IV and UNIT - V. UNIT - I With schematic diagram, explain the sources of HC, CO and NO in a four stroke spark ignition engine. b. Discuss with schematic diagram, hydrocarbon formation and emission mechanism in SI engine. c. Discuss the percentage of emission of NO and NO₂ from CI engine with reason. OR 2 a. Discuss the effect of engine speed on piston and ring blow by. What is positive crank case ventilation system and mention its advantages. Sketch and explain the fuel evaporation control system for SI engine. UNIT - II 3 a. Discuss the effect of compression ratio and cylinder size on SI engine emission control. What is charge stratification? Also explain Honda CVCC stratified change engine. Sketch and explain exhaust gas Recirculation system vaccum regulated. b. Discuss the effect of engine load, engine speed and use of multivalves on CI engine emission control. UNIT - III 5 a. Discuss the effect of following fuel properties on SI engine emission: i) Fuel density ii) Volatility iii) Octane Number Discuss the effect of Additives and addition of water to Diesel on emission. 10 10 What are the ill effects of HC, CO and NO_X on human health? b. Briefly discuss the following Sampling methods: 10 i) Sedimentation ii) Filtration

UNIT - IV

7 a.	Sketch and explain the working of Orsat apparatus used for analysis of pollutants.			
b.	Explain the working of Chemicalunescence type NO_{X} analyser with schematic diagram.	10		
8 a.	a. Sketch and explain the working of BOSCH smoke meter.			
b.	Discuss the test cycle for medium vehicles.	10		
	UNIT - V			
9 a.	Discuss the available options to reduce pollutants from SI engine.	10		
b.	With graph explain conversion efficiency for HC, CO and NO _x for a three way catalytic	1 1		
	converter as a function of A/F Ratio.	1 U		
10 a.	Sketch and explain wire mesh particulate trap and oxidizer.	10		
b.	Sketch and explain the ceramic pelletised type catalyst converter.	10		

