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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

VI SEMESTER B.TECH. (OPEN ELECTIVE)

MAKE UP EXAMINATIONS, APR/MAY 2017

SUBJECT: AUTOMOTIVE POLLUTION & CONTROL [AAE 3284]

REVISED CREDIT SYSTEM

(/ /2017)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.
- ❖ Draw sketches in Pencil only

- 1A. Identify different types of automotive emissions. Enumerate four factors that contributes to Unburnt hydrocarbon emissions in CI engines. (03)
- 1B. What are the types of smoke observed in diesel engine? Explain in detail any SIX factors causing smoke formation in diesel engines. (05)
- 1C. Explain with proper I-V curve solar cell characteristic. (02)
- 2A. What is the need of fuel cell technology? Explain with neat sketch functioning of Phosphoric acid fuel cells, its advantages and disadvantages. (05)
- 2B. Explain with proper sketch the term 'fill factor'. (02)
- 2C. How automotive emission affects global warming? Justify. (03)
- 3A. What is the need for particulate emission measurement? What is the source of generation of particulate matter? Explain briefly partial flow dilution tunnel system (05)
- 3B. Explain with neat sketch constructional & functional details of Flame ionization detector (FID). (05)

- 4A.** What is meant by detonation in SI engines? Discuss FOUR harmful effects of detonation in SI engines. **(04)**
- 4B.** Enlist fuel requirements for CI engines. Discuss four important fuel requirement for CI engines. **(03)**
- 4C.** Discuss the following w. r. t. Gasoline direct injection system: **(03)**
i) Spray-guided combustion system ii) Air-guided combustion system.
- 5A.** Explain with neat diagram stratified downdraft gasifier. Discuss the different working zones of the gasifier and the reactions taking place in the respective zones. Write advantages and disadvantages of stratified gasifier **(05)**
- 5B.** Discuss the need for automotive emission testing and control. Enlist Bharath Stages recommended in India with its year of inception. **(03)**
- 5C.** Explain the two methods of bio diesel production (i) Pyrolysis (ii) micro-emulsification. **(02)**