

- 13a (i). Explain the mechanism of formation of CO, UBHC and NO_x emissions. (10)
(ii). Discuss the various sources of particulate emissions. (6)

(OR)

- b (i). Why three way catalytic converters are employed in the modern day S.I engine driven vehicles? Show the plot of pollutants versus air fuel ratio and conversion efficiency versus air fuel ratio for all the major pollutants from S.I engines. (8)
(ii). With the help of a sketch describe the principle of operation of FID analyser. (8)
- 14a (i). List down the advantages and disadvantages of using LPG in engines. (6)
(ii). Explain any two techniques of using alternative fuels in diesel engines indicating the salient features of each technique. (10)

(OR)

- b (i). Compare the important properties of ethanol with petrol. (8)
(ii). Discuss the steps involved in the conversion of a CI engine to SI engine for using 100 % gas. (8)
- 15a (i). What is a lean burn engine? Explain its advantages and disadvantages. (6)
(ii). With a neat sketch explain the operation of a stratified charge engine. (10)

(OR)

- b (i). Explain the features of a homogeneous charge compression ignition engine. (8)
(ii). Discuss the working principle of laser doppler anemometer with a schematic. (8)

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