

April 2019*Time – Three hours
(Maximum Marks: 75)*

- [N.B: (1) Q.No. 8 in PART – A and Q.No. 16 in PART – B are compulsory. Answer any FOUR questions from the remaining in each PART – A and PART – B
(2) Answer division (a) or division (b) of each question in PART – C.
(3) Each question carries 2 marks in PART – A, 3 marks in Part – B and 10 marks in PART – C.]*

PART – A

1. List out any two uses of petroleum products.
2. What are air craft fuels?
3. Write any two properties of alcohol as fuel.
4. Write the composition of automotive gasoline.
5. What is CNG?
6. What is meant by vegetable oil?
7. What is a hybrid vehicle?
8. What are the advantages of an electric car?

PART – B

9. Write a short note on need of alternative fuels in India.
10. List out alternate fuel.
11. List out the raw materials for manufacture of alcohol fuels.
12. Write a note on fuel flexible vehicle.
13. Brief about emission characteristics of CNG in SI engines.
14. Explain about any one type of vegetable oil used in engine.
15. Discuss advantages and disadvantages of biogas.
16. Write the limitation of electric vehicles.

[Turn over....]

PART - C

17. (a) Explain in detail the oil industry background, history and survey of oil consumption.

(Or)

- (b) Write a detailed account of estimation of petroleum reserve and availability of petroleum products.

18. (a) (i) Brief about emission characteristics of ethanol blend used in CI engines.
(ii) Explain about variable fuelled vehicle.

(Or)

- (b) (i) Write a short note on production process of methanol and ethanol.
(ii) Explain air quality benefits of alcohol fuels.

19. (a) Explain the performance and emission characteristics of LPG in CI engines.

(Or)

- (b) Discuss the aspects of hydrogen storage and handling. Also explain the safety aspects in hydrogen usage as a fuel in an engine.

20. (a) Explain the performances and emissions characteristics of vegetable oil in engines.

(Or)

- (b) (i) Explain esterification of vegetable oils for engines.
(ii) What are the problems experienced while using vegetable oil in diesel engine?

21. (a) Describe the working of fuel cell vehicles. Enlist the advantages as well as disadvantages of using a fuel cell for different applications.

(Or)

- (b) (i) Brief about hi-energy and power density battery.
(ii) Draw the layout of an electric vehicle and explain.
