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Question Paper Code : 71127

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Fifth Semester

Automobile Engineering

AT 2305/AU 54/10122 AU 506 – AUTOMOTIVE FUELS AND LUBRICANTS

(Regulation 2008/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Give the general chemical formula of the following fuels :
   (a) Parafin
   (b) Aromatic.
2. What are the advantages of catalytic cracking?
3. What is lower heating value of a fuel?
4. Define cetane number.
5. What is Stoichiometric air–fuel ratio?
6. What is volumetric analysis?
7. What is blowby loss?
8. What is elasto hydrodynamic lubrication?
9. Classify the lubricating oils.
10. What are the tests on grease?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the petroleum refining process with a neat sketch. (10)
    (ii) What are the products of petroleum refining process? (6)

Or

(b) Explain manufacture of lubricating oil base stocks and finished automotive lubricants.

12. (a) (i) What are the desirable characteristics of SI engine fuels. (6)

(ii) Discuss the signification of distillation curves. (10)

Or

(b) Explain the laboratory method of finding octane number of a given petrol fuel.

13. (a) A mixture of gases has the following volumetric composition $CO_2 = 12\%$, $O_2 = 4\%$, $N_2 = 82\%$ and $CO = 2\%$.

Calculate the gravimetric composition.

Or

(b) (i) Give the calculation of theoretically correct air–fuel ratio for octane C_8H_{18}. (8)

(ii) Explain the exhaust gas analysis by orsat apparatus with a neat sketch. (8)

14. (a) Explain the six classes of mechanical friction and the various factors affecting them.

Or

(b) Explain the hydrodynamic and boundary lubrications with neat sketches.

15. (a) (i) What are the requirements for automotive lubricants? (6)

(ii) Explain the additives and additive mechanism and lubricants. (10)

Or

(b) Explain the properties of lubricating oils and also the properties of grease.