



Reg. No. :

Name :

Eighth Semester B.Tech. Degree Examination, May 2018
(2013 Scheme)

13.803 : AUTOMOBILE ENGINEERING (M)

Time : 3 Hours

Max. Marks : 100

PART – A

(Answer **all** questions. **Each** question carries **2** marks).

1. How do you classify automobiles in abroad-spectrum ?
2. What are the major components of water cooling system ?
3. Explain any 2 functions of ignition system.
4. What is a cut-out relay explain ?
5. Define clutch.
6. List any 4 functions of differentials in automobiles.
7. List any 4 chassis materials.
8. Explain the necessity of steering system in automobiles.
9. Define the following :
 - a) Castor
 - b) Camber.
10. What is a hydraulic shift control ?

PART – B

Answer **any one** question from **each** module. **Each** question carries **20** marks.

Module – 1

11. a) Discuss with the aid of a neat sketch the following types of valve operating mechanisms. **10**
 - i) Side cam mechanism.
 - ii) Overhead camshaft mechanism.
- b) Discuss the requirements of a cooling system. **10**

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12. a) Explain the working principle of a catalytic converter with the help of a suitable sketch. 10
b) Explain splash method of lubrication in automotive engines. 10

Module – 2

13. a) What are the functions of ignition system ? Describe a battery ignition system with the help of a sketch. 10
b) What are automatic ignition advance systems ? Explain. 10
14. Explain the operation and working principle of the following : 20
i) Direction indicators.
ii) Fuel Gauge.

Module – 3

15. a) What are the functions of a clutch ? Discuss the various factors affecting torque transmission in a clutch. 10
b) Determine the size of a clutch plate suitable for an ambassador car employing a single plate type of friction clutch and developing 37.5 KW at 4200 rpm. The inside diameter of the clutch plate is 0.6 times its outside diameter and it is to be ensured that even after a loss of 30% of engine torque due to wear of clutch facing, the clutch does not slip. The intensity of pressure on the facing is not to exceed 70 Kpa. Assume $\mu = 0.3$. 10
16. a) Describe the working of a synchromesh gearbox with the help of a sketch. What are the merits and demerits compared to sliding mesh or constant mesh types ? 10
b) Explain the working principle of a differential. 10

Module – 4

17. a) Explain with neat sketch
i) MacPherson strut suspension system
ii) Coil spring suspension system. 10
b) What are the benefits of power steering ? Explain electronic power steering system. 10
18. a) Explain the terms :
i) Oversteer
ii) Understeer
iii) Neutral steer. 10
b) With the help of suitable sketch explain the purpose and operation of antilock braking system. 10
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