

Code No: **R41037**

R10

Set No. 1

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Explain how the power can be transmitted in front wheel drive by using a neat diagram. [8]
b) Explain about oil filters and oil pumps with neat sketches. [7]
- 2 a) Explain the working of a Hotch kiss diagram. [6]
b) With the help of a neat sketch, explain the construction and operation of a synchro mesh gearbox. [9]
- 3 a) Explain about the types of steering gears. [6]
b) Explain why do the front wheels have to toe-out in turns. Explain what is meant by center point steering. [9]
- 4 a) Discuss clearly the different classification of brake systems. [7]
b) Explain about rigid axle suspension system with neat diagram. [8]
- 5 Write the functions and working principles of following components
i) voltage regulator ii) wiper iii) fuel gauge with circuit diagrams [15]
- 6 a) Explain about engine specifications with regard to lubrication and cooling. [8]
b) Write about suspension sensors, traction control and speed control. [7]
- 7 a) Explain about concentration measurement of engine emissions and exhaust gas treatment using catalytic converter. [8]
b) Write the uses of alternative fuels for emission control. [7]
- 8 a) Explain about service details of valves and valve mechanism. [8]
b) Write about engine reassembly and state different errors to be occurred while reassembly. [7]

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Set No. 2

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AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Sketch a chassis of any four wheeler and mark various parts on it. [8]
b) Explain about turbo charging and super charging. [7]
- 2 a) Sketch and explain the construction and working of torque converter. Bring out the differences between torque converter and fly wheel. [9]
b) Explain the arrangements by which engine power is transmitted to the wheels. [6]
- 3 a) Explain the operation of King-Pin inclination produces directional stability. [7]
b) What is wheel alignment explain? Describe the cam and roller type of Steering Gear. [8]
- 4 a) Explain about objects of suspension system in detail. [8]
b) Explain about pneumatic and vacuum brakes. [7]
- 5 a) Explain clearly the operation of the solenoid switch. [8]
b) Explain the working of a cutout relay as used in the charging circuit. [7]
- 6 a) Explain about engine specifications with regard to power. [5]
b) Write about anti lock brake system (ABS) and central locking safety system in detail. [10]
- 7 a) Explain about mechanism of formation of CO emissions. [8]
b) Write about exhaust gas treatment using thermal converter. [7]
- 8 a) Explain about service details of engine cylinder head. [8]
b) Write about the necessary precautions to be taken while doing engine service. [7]

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Set No. 3

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) What is crankcase ventilation? Explain positive crankcase ventilation system with a neat sketch. [8]
b) How does a two-stroke engine differ from a four-stroke engine? [7]
- 2 a) Explain the construction and working principle of sliding mesh and constant mesh gear boxes. [8]
b) Explain the working of cone clutch used in an automobile with a neat sketch. How a single plate clutch is better compared to cone clutch. [7]
- 3 a) Explain about the steering linkages with neat sketches. [8]
b) Write about the steering geometry in detail. [7]
- 4 a) What happens if the master cylinder reservoir runs dry? How would you rectify the situation caused by the above? [8]
b) What are the objectives of employing a suspension system on an automobile? Explain about independent suspension system. [7]
- 5 a) Explain the working of a starter switch. [6]
b) Explain briefly the lighting system provided in a car and functions of each unit. [9]
- 6 a) Explain about engine specifications with regard to no. of cylinders and arrangement. [8]
b) Write about wind shield and electric windows. [7]
- 7 a) Explain about methods of controlling engine modification. [10]
b) Write about National pollution standards. [5]
- 8 a) Explain about service details of piston-connecting rod assembly. [8]
b) Write about engine servicing of crank shaft. [7]

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Set No. 4

IV B.Tech I Semester Regular/Supplementary Examinations, Nov/Dec - 2015

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Briefly explain about rear wheel drive with neat diagram. [8]
b) Write about the classification of Internal Combustion engines in detail. [7]
- 2 a) List out the functions to be performed by the transmission system of an automobile. [8]
b) What do you mean by double-declutching? Explain how and why it is done. [7]
- 3 Describe the Ackerman and Davis Steering Mechanisms. What are their relative merits? [15]
- 4 a) Write about the requirements of brake fluid. [7]
b) Explain about torsion bar and shock absorber with neat diagrams. [8]
- 5 a) Name the various electrical components used in an automobile & give their functions. [8]
b) What is the principle of a generator? Give its constructional details. [7]
- 6 a) Explain about engine specifications with regard to speed and torque. [7]
b) Write about the seat belt, air bags and bumper safety systems used in automobiles. [8]
- 7 a) Explain about types of pollutants and write in detail the effect of automotive emissions on human health. [10]
b) Write about International pollution standards. [5]
- 8 a) Explain about service details of cylinder block. [8]
b) Write about engine servicing of main bearings. [7]