Code No: **RT41031** **R13** **Set No. 1**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) Mention the advantages of 4 wheel drive of automobiles. [3]
   b) How multi plate clutch can be constructed? [4]
   c) Define the terms: toe-in and toe-out. [3]
   d) Explain about the starting system of automobile. [4]
   e) What is the difference between ABS and Normal braking system? [4]
   f) Why engine service is required? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Draw schematic diagram showing the layout of complete transmission system of a four wheeler automobile. [12]
   b) Differentiate between turbo charging and super charging. [4]

3. a) Explain about the differential rear axle with neat sketch. [8]
   b) What is clutch? Explain the operation of centrifugal clutch. [8]

4. a) Explain castor, camber, king pin inclination, scrub radius and included angle related to front end/steering geometry with neat diagram for each. [8]
   b) What is meant by centre point steering? Discuss in brief. [8]

5. a) Describe about the mechanical braking system. [8]
   b) Explain the principle of electrically operated oil pressure gauge. [8]

6. a) Name different methods of engine cooling. Explain in detail the air cooling method. [8]
   b) What are different safety systems used in automobiles? Explain any two with detail. [8]

7. a) Discuss in detail the service details for the engine piston-connecting rod assembly. [8]
   b) What are the main pollutants from the engine exhaust and mention its effect on the living organisms? [8]

Code No: **RT41031** **R13** **Set No. 2**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) Draw general layout of front wheel drive automobile. [4]
   b) Classify gear box. [3]
   c) State the functions of steering gears. [4]
   d) What do you mean by master cylinder? [4]
   e) What is a traction control system. [4]
   f) Name the different alternative fuels. [3]

PART–B *(3x16 = 48 Marks)*

2. a) What are the lubricating systems in I.C engines? Explain any one lubricating system with neat sketch. [8]
   b) Explain any four components of the engine. [8]

3. a) Explain with suitable sketches the operational features of sliding mesh gearbox. [8]
   b) Explain constructional features of an automobile tyre. [8]

4. a) Discuss about the Ackerman steering mechanism in the automobiles. [8]
   b) Explain camber, castor, steering axis inclination and toe-in. What are the effects of each on the steering characteristics of a vehicle? [8]

5. a) What are the functions of shock absorber? [8]
   b) Explain the working of lighting system of an automobile with neat sketch. [8]

6. a) Why ABS is required in vehicles? Explain the working principle of ABS. [8]
   b) What is the necessity of center locking, air bags, seat belt tensioners? [8]

7. a) How hydrogen fuel is used as an alternative fuel? [8]
   b) What are the precautions to be taken while reassembling an engine? [8]

Code No: **RT41031** **R13** **Set No. 3**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) What is decarbonisation? [4]
   b) How torque converter gearbox differs from fluid flywheel? [4]
   c) What is a steering linkage? [3]
   d) Why the shock absorbers are used in automobile? [3]
   e) Discuss the center locking system for electric windows. [4]
   f) What are the effects of carbon monoxide emissions from an automobile? [4]

PART–B *(3x16 = 48 Marks)*

2. a) Draw and explain pressure lubrication system. [8]
   b) With neat sketch explain the layout of the chassis. [8]

3. a) Explain in detail about any one type of Synchromesh Gear Box with neat sketches. [8]
   b) With help of neat sketch, explain the construction and operation of Hotchkiss drive. [8]

4. a) Sketch and explain various steering geometries. [8]
   b) Discuss different types steering gears with neat sketches. [8]

5. a) Describe the pneumatic braking with neat sketch. [8]
   b) Discuss about the bendix drive mechanism. [8]

6. a) Explain the importance and principle of traction control. [8]
   b) Explain various safety devices used in automobiles. [8]

7. a) Explain the service details of engine cylinder head. [8]
   b) Discuss the thermal reactors used for exhaust gas treatment with neat sketch. [8]

Code No: **RT41031** **R13** **Set No. 4**

IV B.Tech I Semester Regular/Supplementary Examinations, Oct/Nov - 2018

AUTOMOBILE ENGINEERING

(Mechanical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B
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PART–A *(22 Marks)*

1. a) State any four functions of lubrication. [4]
   b) What are the functions of clutch? [4]
   c) What is king pin inclination? [3]
   d) What are the functions of a brake in an automobile? [4]
   e) What is the necessity of mirrors. [4]
   f) List the various properties of alternative fuels. [3]

PART–B *(3x16 = 48 Marks)*

2. a) Explain the working of synchromesh type gear box. [8]
   b) Discuss the principle of operation of a turbocharger with a neat sketch. [8]

3. a) Differentiate between torque tube and Hotchkiss drive. [8]
   b) Explain with neat diagram working of clutch used in royal Enfield bullet. [8]

4. a) Explain the construction and working of davis steering gear mechanism. [8]
   b) Explain briefly the following types of steering gears:
   (i) worm and worm wheel steering gear (ii) rack and pinion steering gear [8]

5. a) Differentiate independent suspension system and rigid axle suspension system with suitable example. [8]
   b) What is meant by tandem cylinder? How is better than a master cylinder? [8]

6. a) Why central locking for electric windows required? Explain with neat sketch. [8]
   b) With a suitable example explain the modification required in an SI engine for it to run it on biogas. [8]

7. a) Describe various alternate fuels available in detail. [8]
   b) Explain in detail about the engine emission control by three way catalytic converter system. [8]