



Roll No.

**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST - 1

Even Semester: 2018-19

Course Code: MEC 401

Course Name: Automotive Vehicles

Programme & Sem: B.Tech (Open Elective) & VIII Sem (Group-I)

Date: 06 March 2019

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instructions:

- (i) Read the question properly and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and Non-programmable calculators are permitted.

Part A

Answer **all** the Questions. **Each** question carries **one** mark.

(6Qx1M=6)

1.

- a) What is the position of inlet and outlet valves during working stroke of an engine?
- b) List two major functions of clutch in an automobile.
- c) Classify vehicles, based on capacity.
- d) List two functions of piston rings.
- e) Draw the line diagram of Turbo charger and name the parts.
- f) Name the component:
 - i) Which connects crank lever and piston in an IC engine
 - ii) Which is in between gear box and differential.

Part B

Answer **all** the Questions. **Each** question carries **six** marks.

(3Qx6M=18)

2. Differentiate between 2 stroke and 4 stroke engines.
3. With neat sketch explain the actual valve timing diagram of four stroke petrol engine.
4. Sketch the layout of an automobile and name the major components of an automobile.

Part C

Answer **both** the Questions. **Each** question carries **eight** marks.

(2Qx8M=16)

5. With neat sketches, explain the four-stroke compression ignition engine.
6. With neat sketch explain the terminologies of IC Engine.

Roll No.



**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

TEST—2

Even Semester: 2018-2019

Course Code: MEC 401

Course Name: Automotive Vehicles

Program & Sem: B. Tech. & VIII Sem (Group 1)

Date: 16 April 2019

Time: 1 Hour

Max Marks: 40

Weightage: 20%

Instructions:

(i) Answer all the questions!

Part A

Answer **both** the Questions.

(6M+8M=14M)

1. The following questions will test your knowledge on transmission systems.
 - (a) Suppose an automobile is traveling on a flat road. The driver sees that the car will have to climb up a slope in a short distance. Does he consider switching to a “lower gear” or a “higher gear” or remaining on the same gear? (2 Marks)
 - (b) Does a lower gear output greater torque than a higher gear? For example, you may state if the first gear outputs greater torque than the fourth gear. (2 Marks)
 - (c) Is the diameter of a lower gear great than that of a higher gear? Explain your answer in words or with sketches. (2 Marks)
2. State whether the statements (a), (b), (c) and (d) that follow are true or false. Justify your claim in each case.
 - (a) Contact breakers are used in battery ignition systems to make and break circuits that produce sparks in spark plugs. (2 Marks)
 - (b) A universal joint is used to transmit power from one shaft to another only when the shafts are collinear. (2 Marks)
 - (c) The Tata Nano cars are examples of pick-up trucks. (2 Marks)
 - (d) The thermo-siphon water cooling system used in automobiles uses a pump to circulate the water used as a coolant. (2 Marks)

Part B

Answer **both** the Questions.

(4M+8M=12M)

3. It is obvious that two of the main objectives of lubrication systems are to reduce loss of power and to reduce wear and tear of parts due to friction. However, a good lubrication system in automobiles produces other benefits. List four such benefits. (4 Marks)
4. Explain the working of the splash lubrication system with a neat sketch. (8 Marks)

Part C

Answer **both** the Questions.

(8M+6M=14M)

5. Explain the working of a forced circulation water cooling system with a neat sketch. The sketch must label all the parts and the explanation must communicate how the different parts work together as a cooling system. (8 Marks)
6. The following questions are on suspension systems.
 - (a) Compare the dependent and independent types of suspension systems by stating one advantage of each system over the other. (2 Marks)
 - (b) Explain the construction and working of the MacPherson strut. (4 Marks)

The End

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**PRESIDENCY UNIVERSITY
BENGALURU**

SCHOOL OF ENGINEERING

END TERM FINAL EXAMINATION

Even Semester: 2018-2019

Course Code: MEC 401

Course Name: Automotive Vehicles (OE)

Program & Sem: B. Tech. & VIII Sem (Group1)

Date: 22 May 2019

Time: 3 Hours

Max Marks: 80

Weightage: 40%

Instructions:

(i) Answer all the questions!

Part A

Answer **all** the Questions.

(3Q=20M)

1. The following questions pertain to braking systems.

- (a) The function of brakes is to produce retardation in order to stop the vehicle over the smallest possible distance. In doing so brakes convert some form of energy into another form of energy. Name these two forms of energy. (2 Marks)
- (b) State whether each of the following statements is true or false. If the statement is false, correct it. If the statement is true, explain why it is true.
 - i. Brakes must produce retarding forces and deceleration of automobiles. (2 Marks)
 - ii. Parking brakes are examples of primary brakes. (2 Marks)
 - iii. Brakes are always located at the transmission system of an automobile and never at the wheels of an automobile. (2 Marks)
 - iv. The total "frictional area" available in drum brakes is more than the frictional area available in disc brakes. (2 Marks)

2. Correctly complete the following sentences.

- (a) The function of the _____ of an automobile is to withstand engine and transmission thrust. (1 Mark)
- (b) Conventional, semi-forward and the full-forward are classifications of automobile chassis based on _____. (1 Mark)
- (c) Wheels, tires, springs, and struts are parts of an automobile _____ system. (1 Mark)
- (d) The thermostat valve in a liquid cooling system opens and closes based on _____. (1 Mark)
- (e) During the suction stroke of an internal combustion engine the piston moves from the _____ dead centre to the _____ dead centre. (2 Marks)

3. Match the following automobile systems to their components. (4 Marks)

Automobile Systems	Automobile Components
1. Transmission Systems	(a) Oil Trough
2. Water Cooling Systems	(b) Retractor Spring
3. Splash Lubrication Systems	(c) Clutch
4. Drum Brake	(d) Radiator Tubes
	(e) Connecting Rod

Part B

Answer **all** the Questions. (4Q=34M)

4. Sketch the distributor fuel injection system and label its parts. Explain its working. (14 Marks)
5. Compare disc brakes with drum brakes by listing five differences between them. (5 Marks)
6. Sketch the air brake system, label its parts and explain its working. (10 Marks)
7. List any five functions of fuel injection systems. (5 Marks)

Part C

Answer **all** the Questions. (4Q=26 M)

The following questions pertain to suspension systems.

8. Explain the difference between a spring and a shock absorber. (4 Marks)
9. Consider two cars that are identical in all aspects except for their suspension systems. One car has a suspension system that is made up only of springs. The other car has a suspension system made up of springs and dampers. Which of the two cars would be more comfortable to ride in when going over speed breakers? Explain your answer. (6 Marks)
10. Sketch the telescopic shock absorber labelling its parts and explain its working. (8 Marks)
11. Sketch a layout of the air suspension system labelling its components and explain its working. (8 Marks)

The End



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SCHOOL OF ENGINEERING

SUMMER TERM / MAKE UP END TERM EXAMINATION

Semester: Summer Term 2019

Course Code: MEC 401

Course Name: Automotive Vehicles

Program & Sem: B.Tech (MEC) & VII Sem. (OE) (2015 Batch)

Date: 25 July 2019

Time: 2 Hours

Max Marks: 80

Weightage: 40%

Instructions:

- (i) Read the question properly and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Use pencil for Sketches.

Part A

Answer **all** the Questions. **Each** question carries **six** marks.

(4Qx6M=24)

1. Discuss the types of springs used in suspension system.
2. Explain helical spring or coil spring, with an appropriate sketch.
3. Briefly classified the braking system.
4. Explain chassis with its classification.

Part B

Answer **all** the Questions. **Each** question carries **ten** marks.

(3Qx10M=30)

5. Briefly explain power braking system.
6. With neat sketch explain drum braking system.
7. List out 5 Difference between disc and drum brakes.

Part C

Answer **both** the Questions. **Each** question carries **thirteen** marks.

(2Qx13M=26)

8. Briefly explain the major function of a suspension system with neat sketch diagram.
9. Explain in detail, the working of Air braking system.

