INSTITUTEOFAERONAUTICALENGINEERING

(Autonomous)
Dundigal,Hyderabad-500043

MECHANICAL ENGINEERING

TUTORIAL QUESTION BANK

Course Name	**AUTOMOBILE ENGINEERING**
Course Code	AME020
Class	VIIISemester
Branch	Mechanical Engineering
Year	2019-2020
Course Coordinator	Mr.VKVSKrishnamRaju, Assistant Professor, ME
Course Faculty	Mr.VKVSKrishnamRaju, Assistant Professor Mr. M Prashanth Reddy, Assistant Professor

COURSE OBJECTIVES:

The course should enable the students:

I	Understand the function of various parts of automobile, features of fuel supply systems for S.I and C.I engines.
II	Distinguish the features of various types of cooling, ignition and electrical systems.
III	Identify the merits and demerits of the various transmission and suspension systems.
IV	Recognize the working of various braking and steering systems.
V	Summarize the ways and means of reducing the emissions from automobiles.

COURSE OUTCOMES (COs):

CO CODE	DESCRIPTION
CO 1	Understanding Automobile engines, fuel supply system, injection components.
CO 2	Understanding of ignition systems, cooling processes and Electrical system.
CO 3	Understanding the working of transmission and suspension systems of various automobiles.
CO 4	Understanding the working of braking and steering systems of various automobiles.
CO 5	Understanding the national pollution standards and incorporating emission control techniques. Usage of alternating fuels.

COURSE LEARNING OUTCOMES:

Students, who complete the course, will have demonstrated the ability to do the following:

CLO CODE	DESCRIPTION
AME020.01	Understand the basic working of Auto mobile and different automobile components
AME020.02	Understand the importance of lubrication system in automobile
AME020.03	Compare different fuel injection system and advantages of each individual and Concept electronic controlled fuel injection
AME020.04	Compare the different cooling processes in IC engines, working of radiator and cooling accessories

AME020.05	Analyze the different spark ignition system advantages of each individual system
AME020.06	Understand the working of different automobile components like lighting system, horn, wiper, fuel gauge, temperature indicator
AME020.07	Understand the different working principles of clutches, and fly wheel
AME020.08	Analyse the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes
AME020.09	Explain the shock absorbers, suspension system and mechanisms to use for this
AME020.10	Compare the types of braking system, working principles
AME020.11	Explain the steering system and components of steering system
AME020.12	Explain the steering mechanisms, techniques to improve better steering
AME020.13	Understand the importance of pollution controls, pollution control techniques
AME020.14	Understand the importance of alternative fuels to reduce the environment emotions
AME020.15	Analyse the different alternative energy sources to reduce the environment emotions

TUTORIAL QUESTION BANK

UNIT – I				
INTRODUCTION				
Part - A (Short Answer Questions)				
S No	**QUESTION**	**Blooms Taxonomy level**	**Course Outcomes**	**Course Learning Outcomes**
1	What are the four basic components of the automobile structure?	Understand	CO 1	AME020.01
2	How gear box is important in an automobile?	Understand	CO 1	AME020.01
3	What is the reason for distortion of frame to parallelogram shape?	Understand	CO 1	AME020.01
4	How the carbon from the cylinder head is removed?	Remember	CO 1	AME020.01
5	When should the overhauling of the engine is to be done?	Remember	CO 1	AME020.01
6	What is the friction that occurs between the layers of oil in an oil film?	Understand	CO 1	AME020.02
7	What is the primary function of the lubrication?	Understand	CO 1	AME020.02
8	What is the important characteristic of lubricating oil?	Understand	CO 1	AME020.02
9	What is the most commonly used lubrication system in an automobile?	Understand	CO 1	AME020.02
10	What is the most widely used fuel supply system for car engines?	Understand	CO 1	AME020.02
11	What is the source of the drive for a mechanical fuel pump in an engine?	Remember	CO 1	AME020.02
12	Write the function of venturi in the carburettor?	Remember	CO 1	AME020.03
13	When will the engine choke is closed?	Remember	CO 1	AME020.03
14	Which is the most accurate petrol injection system?	Remember	CO 1	AME020.03
15	Why the compression ratio is high in an automotive diesel engine?	Remember	CO 1	AME020.03
16	Where is the fuel feed pump in a diesel engine is mounted?	Understand	CO 1	AME020.03

17	What is the approximate value of the cranking compression pressure in diesel engine?	Understand	CO 1	AME020.03
18	What is the approximate value of the temperature after compression in a diesel engine?	Understand	CO 1	AME020.03
19	What is the ignition temperature of diesel fuel?	Understand	CO 1	AME020.03
20	How the fuel injection timing in a distributor type pump is controlled?	Understand	CO 1	AME020.03
Part - B (Long Answer Questions)				
1	Describe the working of crescent type gear pump and Rotor pump with neat sketches?	Understand	CO 1	AME020.01
2	What are the requirements of lubricants?	Understand	CO 1	AME020.01
3	Sketch and explain clearly Splash Lubrication system?	Understand	CO 1	AME020.01
4	Explain piston rings function, materials, number of rings clearly.	Understand	CO 1	AME020.02
5	Describe Four wheel drive.	Understand	CO 1	AME020.01
6	Explain A.C mechanical fuel pump.	Remember	CO 1	AME020.01
7	How Petrol can be injected according to location?	Understand	CO 1	AME020.01
8	Discus functions of a carburetor?	Understand	CO 1	AME020.01
9	Explain common rail fuel injection system.	Remember	CO 1	AME020.02
10	Draw and explain the schematic diagram of electronic petrol injection system.	Remember	CO 1	AME020.02
11	Sketch the layout of four wheels automobile and indicate major components.	Remember	CO 1	AME020.02
12	Distinguish between gear pump and vane pump.	Understand	CO 1	AME020.02
13	Discus the importance of lubrication.	Understand	CO 1	AME020.03
14	Draw and Explain pressure lubrication system.	Understand	CO 1	AME020.03
15	Explain the working principle of simple carburetor with a neat sketch.	Understand	CO 1	AME020.03
16	Explain the working of nozzle and classify nozzles.	Remember	CO 1	AME020.03
17	Explain fuel injection pump in CI engines.	Remember	CO 1	AME020.03
18	How valves are serviced?	Remember	CO 1	AME020.03
19	Explain the defects in simple carburetor?	Remember	CO 1	AME020.03
20	How air is cleaned in engines?	Understand	CO 1	AME020.03
Part - C (Problem Solving and Critical Thinking Questions)				
1	Distinguish between front engine and rear engine.	Understand	CO 1	AME020.01
2	Explain rear engine vehicles.	Understand	CO 1	AME020.01
3	Distinguish between two wheel drive and four wheel drive vehicles.	Understand	CO 1	AME020.01
4	Compare petrol and diesel engines for automobile applications	Remember	CO 1	AME020.02
5	Compare single cylinder and 3-cylinder engine of same power for automobiles.	Understand	CO 1	AME020.02
6	Distinguish between electrical vehicles with petrol vehicle.	Remember	CO 1	AME020.02
7	Compare series and parallel hybrid systems.	Understand	CO 1	AME020.03

8	Describe clearly the requirements of air-fuel ratio mixtures for starting a petrol engine from cold.	Understand	CO 1	AME020.03
9	Analyze the merits of pre lubrication system	Remember	CO 1	AME020.03
10	Compare carburetor system with direct petrol injection.	Remember	CO 1	AME020.03
UNIT - II				
COOLING SYSTEM				
Part – A (Short Answer Questions)				
S No	**QUESTION**	**Blooms Taxonomy level**	**Course Outcomes**	**Course Learning Outcomes**
1	What is the approximate percentage of utilization of the heat in the engine for the useful work?	Understand	CO 2	AME020.04
2	What is the approximate percentage of loss of fuel energy to the cylinder walls?	Understand	CO 2	AME020.04
3	Write the sequence of the coolant circulation	Understand	CO 2	AME020.04
4	How wax thermostat is better than Bellows type thermostat?	Understand	CO 2	AME020.04
5	Sketch coolant pump.	Remember	CO 2	AME020.05
6	How the cooling fans are driven?	Understand	CO 2	AME020.05
7	What are the three components of primary ignition circuit?	Understand	CO 2	AME020.06
8	What are the components of the secondary ignition circuit?	Remember	CO 2	AME020.04
9	What is the material generally used for the contact breaker points?	Understand	CO 2	AME020.06
10	What is ‘dwell’?	Understand	CO 2	AME020.05
11	What is the result of excessive contact breaker gap?	Remember	CO 2	AME020.05
12	How the contact breaker points are opened?	Understand	CO 2	AME020.05
13	How the contact breaker points are closed?	Remember	CO 2	AME020.05
14	Which device is used to set the accurate contact breaker gap?	Remember	CO 2	AME020.06
15	When will the vacuum advance mechanism is operated?	Understand	CO 2	AME020.06
16	How the life of a spark plug of two stroke engine and four stroke engines is related with each other?	Understand	CO 2	AME020.05
17	What is the significance of spark plug having white insulator?	Remember	CO 2	AME020.05
18	What is the significance of spark plug with a black centre?	Understand	CO 2	AME020.06
19	What are the three units contained in a regulator for automobile D.C. generator?	Remember	CO 2	AME020.06
20	What is the use of thermistor in an alternator regulator?	Understand	CO 2	AME020.06
Part - B (Long Answer Questions)				
1	Draw the charging Circuit and explain the principle of a D.C Generator.	Understand	CO 2	AME020.04
2	Draw and explain standard Bendix drive (or) Folo-thru drive.	Understand	CO 2	AME020.04

3	What are the requirements of Ignition System?	Understand	CO 2	AME020.04
4	Explain current and voltage regulator with a neat sketch.	Remember	CO 2	AME020.04
5	Explain pulse generator with a neat sketch.	Remember	CO 2	AME020.05
6	Compare different contact breakers.	Understand	CO 2	AME020.05
7	Explain spark advance and its advantages.	Understand	CO 2	AME020.06
8	What are the main requirements of a charging system?	Understand	CO 2	AME020.04
9	Describe the working of a fuel gauge.	Remember	CO 2	AME020.06
10	Explain the construction of D.C Generator.	Remember	CO 2	AME020.05
11	Explain the principle of electrically operated oil pressure gauge.	Understand	CO 2	AME020.05
12	Explain the working of a Horn.	Understand	CO 2	AME020.05
13	Sketch and explain the different types of thermostats used in automobile.	Remember	CO 2	AME020.05
14	Explain in detail the type of cooling pump used in water cooling system.	Understand	CO 2	AME020.06
15	Compare battery ignition system with magneto ignition system.	Understand	CO 2	AME020.06
16	Draw and explain wind screen wiper.	Remember	CO 2	AME020.05
17	How overrunning clutch is used as starting device?	Remember	CO 2	AME020.05
18	Describe magneto ignition system with a neat sketch.	Understand	CO 2	AME020.06
19	How we can control generator output by the third brush.	Understand	CO 2	AME020.06
20	Explain centrifugal advance method in automatic ignition advance method?	Understand	CO 2	AME020.06
Part – C (Problem Solving and Critical Thinking)				
1	Compare intelligent cooling with conventional cooling. How intelligent cooling systems improve engine performance?	Understand	CO 2	AME020.04
2	How electronic ignition systems improve the performance of engine?	Understand	CO 2	AME020.04
3	How automatic ignition advance result in higher efficiency?	Understand	CO 2	AME020.04
4	Compare battery and magneto ignition systems	Remember	CO 2	AME020.05
5	Analyze the performance of D-C generator and alternator for automobile application	Remember	CO 2	AME020.05
6	Why alternator does not require cut-out relay and current regulator?	Understand	CO 2	AME020.05
7	Compare Folo-thru and Bendix drive starting mechanism	Understand	CO 2	AME020.06
8	Compare centrifugal and vacuum spark advance and retard mechanisms.	Remember	CO 2	AME020.06
9	Explain the advantage of a solenoid switch compared to the manual type.	Understand	CO 2	AME020.06
10	What are the considerations on which the size of starting motor depends?	Understand	CO 2	AME020.06

UNIT -III				
TRANSMISSION AND SUSPENSIONS SYSTEMS				
Part - A (Short Answer Questions)				
S No	**QUESTION**	**Blooms Taxonomy level**	**Course Outcomes**	**Course Learning Outcomes**
1	What is the purpose of transmission in an automobile?	Understand	CO 3	AME020.07
2	How to increase the torque in a vehicle?	Understand	CO 3	AME020.07
3	Classify the different types of clutches.	Remember	CO 3	AME020.07
4	What is the use of synchronizing device?	Remember	CO 3	AME020.07
5	What is the function of flywheel?	Understand	CO 3	AME020.07
6	In simple epicyclic gear set what is the output member and why it is used?	Understand	CO 3	AME020.07
7	Explain the principles of different cluches.	Understand	CO 3	AME020.07
8	Which component in the torque converter allows multiplication of the torque?	Understand	CO 3	AME020.08
9	Which component in the torque converter drives the oil?	Remember	CO 3	AME020.08
10	When will the maximum torque multiplication occurs in a torque converter?	Remember	CO 3	AME020.08
11	What is taper lite leaf spring?	Remember	CO 3	AME020.08
12	With respect to suspension system when will the vehicle ride will be comfortable?	Understand	CO 3	AME020.08
13	What is the function of a stabilizer in an automobile?	Understand	CO 3	AME020.08
14	What is the use of Pan hard rod?	Remember	CO 3	AME020.08
15	What is the function of a shackle with a leaf spring?	Understand	CO 3	AME020.09
16	What is used for lining of spring eyes in case of cars?	Remember	CO 3	AME020.09
17	What is the use of zinc liners between the leaves of spring?	Remember	CO 3	AME020.09
18	What is the other name of torsion bar?	Remember	CO 3	AME020.09
19	What is the use of shock absorber in an automobile?	Remember	CO 3	AME020.09
20	Where the coil spring is placed in the wishbone suspension?	Understand	CO 3	AME020.09
Part – B (Long Answer Questions)				
1	What are the requirements of a clutch?	Understand	CO 3	AME020.07
2	How clutch can be operated electromagnetically?	Understand	CO 3	AME020.07
3	Explain with a neat sketch how Multi plate clutch can be constructed?	Understand	CO 3	AME020.07
4	Explain with a neat sketch the principle of differential?	Remember	CO 3	AME020.07
5	What are the Desirable properties of tyres?	Remember	CO 3	AME020.07
6	Explain the construction of fluid fly wheel and write the advantages and disadvantages.	Understand	CO 3	AME020.07
7	How stabilizer bar works? Explain with a neat sketch.	Understand	CO 3	AME020.08

8	Explain single plate clutch with neat sketch.	Understand	CO 3	AME020.08
9	Sketch and explain different types of clutches.	Understand	CO 3	AME020.08
10	Explain the principle of centrifugal clutch with a neat sketch.	Remember	CO 3	AME020.08
11	What are the types of Rubber springs? Explain with a neat sketch.	Understand	CO 3	AME020.08
12	Explain working of a synchro mesh gear box with a neat sketch.	Remember	CO 3	AME020.08
13	What are the various problems encountered on wheels and tyres? How they can be eliminated?	Understand	CO 3	AME020.08
14	Differentiate between the torque tube and Hotch kiss drive.	Remember	CO 3	AME020.08
15	Explain vertical guide suspension with sketch?	Remember	CO 3	AME020.08
16	Explain the construction and working of a telescopic type of shock absorber.	Remember	CO 3	AME020.09
17	Explain the purpose of shackle in leaf spring mounting with a neat sketch?	Understand	CO 3	AME020.09
18	What are the objectives of employing suspension on an automobile?	Understand	CO 3	AME020.08
19	Sketch and explain the construction and working of wishbone type independent front suspension.	Understand	CO 3	AME020.09
20	Explain Air suspension with a neat sketch.	Understand	CO 3	AME020.09
Part – C (Problem Solving and Critical Thinking)				
1	Compare friction clutch and fluid flywheel.	Understand	CO 3	AME020.07
2	Compare friction clutch and fluid flywheel.	Understand	CO 3	AME020.07
3	Explain magnetic and centrifugal clutches.	Remember	CO 3	AME020.07
4	Compare tubeless tyre with conventional tyre.	Remember	CO 3	AME020.08
5	Compare torque tube and conventional propeller shaft.	Understand	CO 3	AME020.08
6	Compare rigid axle and independent suspension.	Understand	CO 3	AME020.08
7	Compare air suspension with spring suspension.	Understand	CO 3	AME020.08
8	What are advantages and disadvantages of auto transmission?	Understand	CO 3	AME020.09
9	Compare sliding mesh and syncro mesh gear boxes.	Remember	CO 3	AME020.09
10	How epicyclic gears are used for automatic transmission.	Understand	CO 3	AME020.09
UNIT -IV				
BRAKING AND STEERING SYSTEMS				
Part – A (Short Answer Questions)				
S No	**QUESTION**	**Blooms Taxonomy level**	**Course Outcomes**	**Course Learning Outcomes**
1	What is the general break efficiency of a new vehicle?	Understand	CO 4	AME020.10

2	Define the brake fade?	Remember	CO 4	AME020.10
3	Why fading of brakes occur?	Understand	CO 4	AME020.10
4	What is the ratio of braking effect at the front and at the rear wheels due to weight transfer?	Understand	CO 4	AME020.10
5	How usually the brakes employed in cars are operated?	Understand	CO 4	AME020.10
6	Which component of the wheel cylinder seals the brake fluid?	Remember	CO 4	AME020.10
7	What is the use of push rod during braking?	Remember	CO 4	AME020.10
8	In drum type brakes why the fluid on releasing, returns to the master cylinder?	Understand	CO 4	AME020.11
9	What is the use of intake port in the master cylinder?	Understand	CO 4	AME020.11
10	When will the proportioning valve does not work?	Understand	CO 4	AME020.10
11	Where are the most anti-skid devices employed?	Understand	CO 4	AME020.11
12	In disc brakes, why pad-to-disc adjustment is provided?	Understand	CO 4	AME020.11
13	What is the function of brake bleeding process?	Remember	CO 4	AME020.11
14	What are the types of brakes generally used on front and on rear of Maruti car?	Understand	CO 4	AME020.10
15	Where generally the electric brakes are used?	Remember	CO 4	AME020.12
16	On suspended vacuum brakes, when will the vacuum present on both sides of the piston?	Remember	CO 4	AME020.12
17	In which vehicles generally air brakes are used?	Understand	CO 4	AME020.12
18	Hand brake is used on which wheels?	Remember	CO 4	AME020.12
19	What is the main component of the material of the brake lining?	Remember	CO 4	AME020.12
20	What is the maximum disc runout allowed on the vehicle?	Remember	CO 4	AME020.12
Part – B (Long Answer Questions)				
1	What is meant by bleeding of brakes?	Understand	CO 4	AME020.11
2	What is brake adjustment? When is it required?	Understand	CO 4	AME020.10
3	Define camber, castor. Explain with a neat sketch.	Understand	CO 4	AME020.12
4	Define king pin inclination. Explain with a neat sketch.	Understand	CO 4	AME020.10
5	What is meant by Toe-in or Toe-out? Explain with a neat sketch.	Remember	CO 4	AME020.11
6	Explain Rack and pinion steering gear with neat sketch.	Remember	CO 4	AME020.10
7	Draw and explain worm and nut type steering gear.	Understand	CO 4	AME020.12
8	Derive an equation for the condition for correct steering mechanism?	Understand	CO 4	AME020.11
9	Explain different types of steering gears.	Understand	CO 4	AME020.11
10	How worm and wheel steering gear mechanism works?	Understand	CO 4	AME020.10
11	What are the advantages of power steering?	Understand	CO 4	AME020.10
12	Sketch and explain the construction and working of Ackermann steering mechanism.	Remember	CO 4	AME020.12
13	Explain self-righting torque.	Remember	CO 4	AME020.12

14	Explain special steering columns.	Understand	CO 4	AME020.12
15	Describe the working of a power steering unit with a neat sketch.	Remember	CO 4	AME020.11
16	How hydraulic brake works? Explain with a neat sketch.	Understand	CO 4	AME020.11
17	Describe the steering linkage for vehicle with rigid axle front suspension.	Understand	CO 4	AME020.12
18	Explain the construction and working of Davis steering gear mechanism.	Understand	CO 4	AME020.12
19	How recirculating ball type steering gear is working. Explain with sketch.	Understand	CO 4	AME020.12
20	Describe steering linkage for vehicle with independent front suspension.	Understand	CO 4	AME020.12
Part – C (Problem Solving and Critical Thinking)				
1	Explain why the master cylinder is not filled completely with the braking fluid.	Understand	CO 4	AME020.10
2	Why drum type hydraulic brakes are so designed that there should be residual pressure in the brake lines even when the brakes are in the released position?	Understand	CO 4	AME020.11
3	Out of the disc and the drum brakes, which have better anti-fade characteristics and explain them.	Understand	CO 4	AME020.10
4	What are the advantages of using synthetic resin adhesives for attaching brake linings as compared to the conventional riveting?	Remember	CO 4	AME020.12
5	If only the brake on one of the four brake drums is incorrectly adjusted, how does it affect braking performance?	Remember	CO 4	AME020.11
6	Out of the camber and the castor, which is measured first and out of their angle which is adjusted first why?	Understand	CO 4	AME020.11
7	What should be the approximate amount of the following in a car: camber, kingpin inclination, included angle, castor and toe-in?	Understand	CO 4	AME020.12
8	What is the meaning of the terms wander and shimmy in steering and how are they caused?	Understand	CO 4	AME020.11
9	If the kingpin and the wheel centre lines meet below the ground, will the wheels try to toe-in?	Remember	CO 4	AME020.12
10	Explain why the master cylinder is not filled completely with the braking fluid.	Understand	CO 4	AME020.12
UNIT -V				
EMISSIONS FROM AUTOMOBILES				
Part - A (Short Answer Questions)				
S No	**QUESTION**	**Blooms Taxonomy level**	**Course Outcomes**	**Course Learning Outcomes**
1	What are the main pollutants in the engine exhaust?	Understand	CO 5	AME020.13

2	What are the approximate maximum allowable hydrocarbons in the car emission?	Remember	CO 5	AME020.13
3	Define ppm.	Remember	CO 5	AME020.13
4	What is the limit of the percentage of the CO in the exhaust of a car engine?	Remember	CO 5	AME020.13
5	Where is the PCV valve located?	Understand	CO 5	AME020.13
6	Define a PCV valve.	Understand	CO 5	AME020.13
7	List out the functions of PCV valve.	Understand	CO 5	AME020.14
8	What is the position of the PCV valve plunger at idle speed?	Understand	CO 5	AME020.13
9	List out the functions of the charcoal granules.	Remember	CO 5	AME020.14
10	Where is the liquid-vapour separator located?	Remember	CO 5	AME020.14
11	Why EGR system is employed?	Understand	CO 5	AME020.13
12	Define EGR system.	Understand	CO 5	AME020.14
13	Name the type of the pump for the air injection system.	Understand	CO 5	AME020.14
14	What is the main purpose of the diverter valve in the air injection system?	Understand	CO 5	AME020.15
15	Name the catalyst used in the reduction converter?	Understand	CO 5	AME020.15
16	Name the catalyst used in the converter for oxidising HC and CO?	Understand	CO 5	AME020.15
17	What is controlled by the first converter in a three way converter?	Remember	CO 5	AME020.14
18	What is the air fuel ratio required for the efficient operation of a three way converter?	Remember	CO 5	AME020.15
19	What does the amount of oxygen in the exhaust indicate?	Understand	CO 5	AME020.15
20	Define ‘catalyst operating window’.	Understand	CO 5	AME020.15
Part - B (Long Answer Questions)				
1	How emissions reduced by positive crank case ventilation?	Understand	CO 5	AME020.13
2	What is a multi-point fuel injection system for S.I engines?	Understand	CO 5	AME020.13
3	Explain vacuum advance method in automatic ignition advanced method?	Understand	CO 5	AME020.13
4	List out the advantages of C.N.G?	Understand	CO 5	AME020.14
5	List out the advantages of L.P.G?	Understand	CO 5	AME020.13
6	Explain the operation of exhaust gas analyser.	Remember	CO 5	AME020.13
7	Explain the working of positive crank case ventilation (PCV) with PCV valve.	Remember	CO 5	AME020.14
8	How hydrogen fuel is utilized as alternative fuel?	Understand	CO 5	AME020.15
9	What is exhaust gas recirculation (EGR)? How EGR valve works?	Understand	CO 5	AME020.14
10	How air injection systems reduce pollution?	Remember	CO 5	AME020.14
11	How fuel tank carburetor ventilation reduces the pollutants?	Remember	CO 5	AME020.13
12	Explain the working of catalytic converter?	Understand	CO 5	AME020.13

13	Explain the two types of techniques for treating the exhaust gases to reduce the pollutants?	Understand	CO 5	AME020.14
14	Explain the methods for reducing emissions from automobile.	Understand	CO 5	AME020.14
15	How common rail fuel injection system in Diesel engines works.	Understand	CO 5	AME020.14
16	What are the advantages and disadvantages of Bio-diesel?	Understand	CO 5	AME020.13
17	Explain clearly how the proper design of combustion chamber help in reducing exhaust emission	Remember	CO 5	AME020.15
18	What are the main pollutants from the engine exhaust and mention its effects on the living organisms.	Remember	CO 5	AME020.14
19	How diesel catalytic converter-cum-particulate trap reduce pollutants?	Understand	CO 5	AME020.15
20	Explain unheated lambda probe with neat sketch.	Understand	CO 5	AME020.15
Part – C (Problem Solving and Critical Thinking)				
1	Why does the three – way converter not work in case of diesel engines?	Understand	CO 5	AME020.13
2	At what air-fuel ratio does the three – way converter operate at maximum efficiency? How is this ratio achieved precisely?	Understand	CO 5	AME020.13
3	Why should unleaded gasoline be used for engines employing catalytic converters?	Understand	CO 5	AME020.13
4	Compare the catalytic converter method with blowing of air only into the exhaust manifold	Understand	CO 5	AME020.14
5	How does PCV valve protect crankcase from engine backfiring?	Understand	CO 5	AME020.14
6	If the opening temperature for the thermostat valve in the engine cooling system is raised, how does it affect the pollution?	Remember	CO 5	AME020.13
7	How does an electric – assist type of choke help decrease the emission of pollutants?	Remember	CO 5	AME020.13
8	How does the fuel-air ratio affect the exhaust emission idle?	Remember	CO 5	AME020.15
9	How does the fuel injection help to reduce automobile pollution?	Remember	CO 5	AME020.14
10	What happens when at higher speeds the crankcase emissions exceed the flow rating of the PCV valve?	Understand	CO 5	AME020.15

Prepared By:

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