

Hall Ticket No

Question Paper Code: AME020



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

## MODEL QUESTION PAPER

B.Tech VIII Semester End Examinations, May – 2019

Regulations: IARE-R16

### AUTOMOBILE ENGINEERING (MECHANICAL ENGINEERING)

Time: 3 hours

Max. Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

#### UNIT – I

1. a) Distinguish between front engine and rear engine automobile with neat diagrams. [7M]  
b) Compare single cylinder and 3-cylinder engine of same power for automobiles with diagram. [7M]
2. a) Describe clearly the requirements of air-fuel ratio mixtures for starting a petrol engine from cold. [7M]  
b) Compare carburetor system with direct petrol injection with neat diagram. [7M]

#### UNIT – II

3. a) What is ECU? How electronic ignition systems improve the performance of engine? [7M]  
b) Compare battery and magneto ignition systems, explain advantages of each individual [7M]
4. a) With suitable example differentiate between Folo-thru and Bendix drive starting mechanism. [7M]  
b) Compare intelligent cooling with conventional cooling. How intelligent cooling systems improve engine performance? [7M]

#### UNIT – III

5. a) Sketch and explain the construction and working of wishbone type independent front suspension. [7M]  
b) Explain the construction and working of a telescopic type of shock absorber. [7M]
6. a) What is auto transmission? Discuss its advantages and disadvantages of auto transmission? [7M]  
b) What are the various problems encountered on wheels and tyres? How they can be eliminated? [7M]

#### UNIT – IV

7. a) On suspended vacuum brakes, when will the vacuum present on both sides of the piston? [7M]  
b) Explain the construction and working of Davis steering gear mechanism. [7M]
8. a) Why drum type hydraulic brakes are so designed that there should be residual [7M]

- pressure in the brake lines even when the brakes are in the released position?
- b) Out of the disc and the drum brakes, which have better anti-fade characteristics and explain them? [7M]

**UNIT – V**

9. a) At what air-fuel ratio does the three way converter operate at maximum efficiency? [7M]  
How is this ratio achieved precisely?
- b) Compare the catalytic converter method with blowing of air only into the exhaust manifold [7M]
10. a) How does an electric assist type of choke help decrease the emission of pollutants? [7M]
- b) What happens when at higher speeds the crankcase emissions exceed the flow rating of the PCV valve? [7M]



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## COURSE OBJECTIVES:

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:

S. No.	Description	Blooms Taxonomy Level
AME020.01	Understand the basic working of Auto mobile and different automobile components	Understand
AME020.02	Analyze the working of the basic components in the IC engines	Understand
AME020.03	Understand the importance of lubrication system in automobile	Understand
AME020.04	Compare different fuel injection system and advantages of each individual and Concept electronic controlled fuel injection	Understand
AME020.05	Compare the different cooling processes in I C engines, working of radiator and cooling accessories	Understand
AME020.06	Analyze the different spark ignition system advantages of each individual system	Remember
AME020.07	Understand the working of different automobile components like lighting system, horn, wiper, fuel gauge, temperature indicator	Understand
AME020.08	Understand the different working principles of clutches, and fly wheel	Understand
AME020.09	Analyse the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes	Understand
AME020.10	Explain the shock absorbers, suspension system and mechanisms to used for this	Understand
AME020.11	Compare the types of braking system, working principles	Remember
AME020.12	Explain the steering system and components of steering system	Remember
AME020.13	Explain the steering mechanisms, techniques to improve better steering	Remember
AME020.14	Understand the importance of pollution controls, pollution control techniques	Remember
AME020.15	Understand the importance of alternative fuels to reduce the environment emotions	Remember
AME020.16	Analyse the different alternative energy sources to reduce the environment emotions	Understand

## MAPPING OF MODEL QUESTION PAPER QUESTIONS TO THE ACHIEVEMENT OF COURSE OUTCOMES

SEE Question No.	Course Outcomes			Blooms Taxonomy
1	a	AME020.01	Understand the basic working of Auto mobile and different automobile components	Understand
	b	AME020.02	Analyze the working of the basic components in the IC engines	Understand
2	a	AME020.02	Analyze the working of the basic components in the IC engines	Understand
	b	AME020.04	Compare different fuel injection system and advantages of each individual and Concept electronic controlled fuel injection	Understand
3	a	AME020.06	Analyze the different spark ignition system advantages of each individual system	Remember
	b	AME020.06	Analyze the different spark ignition system advantages of each individual system	Remember
4	a	AME020.07	Understand the working of different automobile components like lighting system, horn, wiper, fuel gauge, temperature indicator	Understand
	b	AME020.05	Compare the different cooling processes in I C engines, working of radiator and cooling accessories	Understand
5	a	AME020.10	Explain the shock absorbers, suspension system	Understand
	b	AME020.10	Explain the shock absorbers, suspension system	Understand
6	a	AME020.09	Analyzee the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes	Understand
	b	AME020.09	Analyzee the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes	Understand
7	a	AME020.11	Compare the types of braking system, working principles	Understand
	b	AME020.13	Explain the steering mechanisms, techniques to improve better steering	Understand
8	a	AME020.11	Compare the types of braking system, working principles	Understand
	b	AME020.11	Compare the types of braking system, working principles	Understand
9	a	AME020.14	Understand the importance of pollution controls, pollution control techniques	Understand
	b	AME020.14	Understand the importance of pollution controls, pollution control techniques	Understand
10	a	AME020.16	Analyse the different alternative energy sources to reduce the environment emotions	Remember
	b	AME020.16	Analyse the different alternative energy sources to reduce the environment emotions	Remember

### Signature of Course Coordinator

Mr. V K V S Krishnam Raju  
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