

Hall Ticket No

Question Paper Code: AME552



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER - II

B.Tech VI Semester End Examinations, April/May – 2020

Regulations: IARE-R16

INTRODUCTION TO AUTOMOBILE ENGINEERING (AERONAUTICAL 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) Describe the working of crescent type gear pump and Rotor pump with neat sketches? [7M]
- b) What is the approximate value of the cranking compression pressure in diesel engine?. [7M]
2. a) What are the four basic components of the automobile structure? What is the reason for distortion of frame to parallelogram shape? [7M]
- b) What is the source of the drive for a mechanical fuel pump in an engine? [7M]

UNIT – II

3. a) How the life of a spark plug of two stroke engine and four stroke engines is related with each other? [7M]
- b) What is the approximate percentage of loss of fuel energy to the cylinder walls? [7M]
4. a) What is the approximate percentage of utilization of the heat in the engine for the useful work? [7M]
- b) Compare intelligent cooling with conventional cooling. How intelligent cooling systems improve engine performance? [7M]

UNIT – III

5. a) Explain the construction of fluid fly wheel and write the advantages and disadvantages. [7M]
- b) Explain the purpose of shackle in leaf spring mounting with a neat sketch? [7M]
6. a) Sketch and explain the construction and working of wishbone type independent front suspension. [7M]
- b) What are the various problems encountered on wheels and tyres? How they can be eliminated? [7M]

UNIT – IV

7. a) How recirculating ball type steering gear is working. Explain with sketch. [7M]
- b) In drum type brakes why the fluid on releasing, returns to the master cylinder? [7M]

8. a) What is the ratio of braking effect at the front and at the rear wheels due to weight transfer? [7M]
b) What is meant by Toe-in or Toe-out? Explain with a neat sketch. [7M]

UNIT – V

9. a) Explain vacuum advance method in automatic ignition advanced method? [7M]
b) Explain clearly how the proper design of combustion chamber help in reducing exhaust emission [7M]
10. a) What are the main pollutants from the engine exhaust and mention its effects on the living organisms. [7M]
b) If the opening temperature for the thermostat valve in the engine cooling system is raised, how does it affect the pollution? [7M]



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INTRODUCTION TO AUTOMOBILE ENGINEERING

COURSE OBJECTIVES:

The course should enable the students to:

S.No	Description
I	Understand the concept on working principles of various systems of auto mobiles and fuel supply systems.
II	Understand the working principles and operational details of cooling, ignition and electrical systems
III	Analyze the working principles and operations details of transmission and suspension systems.
IV	Evaluate the operational details and design principles of breaking and steering systems
V	Compare the effects of emissions from automobiles. And to know the ways and means of reducing emissions

COURSE OUTCOMES (COs):

CO 1:	Understand the applications of CFD in various engineering fields and to generate governing equations in conservative and non-conservative form.
CO 2:	Understand the mathematical behavior of partial differential equations and classify into hyperbolic, parabolic and elliptical natures.
CO 3:	Acquire the concepts of finite difference method through discretization and grid generation techniques.
CO 4:	Identify different CFD techniques available for different partial differential equations.
CO 5:	Explore the concepts of finite volume methods, and its difference from finite difference method.

COURSE LEARNING OUTCOMES

Students, who complete the course, will be able to demonstrate the ability to do the following

AME552.01	Understand the basic working of Auto mobile and different automobile components
AME552.02	Analyze the working of the basic components in the IC engines
AME552.03	Understand the importance of lubrication system in automobile
AME552.04	Compare different fuel injection system and advantages of each individual and Concept electronic controlled fuel injection
AME552.05	Compare the different cooling processes in I C engines, working of radiator and cooling accessories
AME552.06	Analyze the different spark ignition system advantages of each individual system
AME552.07	Understand the working of different automobile components like lighting system, horn, wiper, fuel gauge, temperature indicator
AME552.08	Understand the different working principles of clutches, and fly wheel
AME552.09	Analyse the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes
AME552.10	Explain the shock absorbers, suspension system and mechanisms to used for this

AME552.11	Compare the types of braking system, working principles
AME552.12	Explain the steering system and components of steering system
AME552.13	Explain the steering mechanisms, techniques to improve better steering
AME552.14	Understand the importance of pollution controls, pollution control techniques
AME552.15	Understand the importance of alternative fuels to reduce the environment emotions
AME552.16	Analyse the different alternative energy sources to reduce the environment emotions

MAPPING OF SEE - COURSE OUTCOMES

SEE Question No.	Course Outcomes		Course outcomes	Blooms Taxonomy	
1	a	AME552.04	Compare different fuel injection system and advantages of each individual and Concept electronic controlled fuel injection	CO 1	Understand
	b	AME552.04	Compare different fuel injection system and advantages of each individual and Concept electronic controlled fuel injection	CO 1	Understand
2	a	AME552.01	Understand the basic working of Auto mobile and different automobile components	CO 1	Understand
	b	AME552.04	Compare different fuel injection system and advantages of each individual and Concept electronic controlled fuel injection	CO 1	Understand
3	a	AME552.06	Analyze the different spark ignition system advantages of each individual system	CO 2	Remember
	b	AME552.05	Compare the different cooling processes in I C engines, working of radiator and cooling accessories	CO 2	Remember
4	a	AME552.05	Compare the different cooling processes in I C engines, working of radiator and cooling accessories	CO 2	Understand
	b	AME552.05	Compare the different cooling processes in I C engines, working of radiator and cooling accessories	CO 2	Understand
5	a	AME552.09	Analyse the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes	CO 3	Understand
	b	AME552.10	Explain the shock absorbers, suspension system and mechanisms to used for this	CO 3	Understand
6	a	AME552.09	Analyse the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes	CO 3	Understand
	b	AME552.09	Analyse the transmission systems like gear boxes, propeller shafts, universal joints, differential gear boxes	CO 3	Understand
7	a	AME552.11	Compare the types of braking system, working principles	CO 4	Understand
	b	AME552.13	Explain the steering mechanisms, techniques to	CO 4	Understand

			improve better steering		
8	a	AME552.11	Compare the types of braking system, working principles	CO 4	Understand
	b	AME552.14	Understand the importance of pollution controls, pollution control techniques	CO 4	Understand
9	a	AME552.15	Understand the importance of pollution controls, pollution control techniques	CO 5	Understand
	b	AME552.15	Understand the importance of pollution controls, pollution control techniques	CO 5	Understand
10	a	AME552.16	Analyse the different alternative energy sources to reduce the environment emotions	CO 5	Remember
	b	AME552.16	Analyse the different alternative energy sources to reduce the environment emotions	CO 5	Remember

Signature of Course Coordinator

HOD, AE