KUMARAGURU
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character is life

Register Number: …….

B.E DEGREE EXAMINATIONS: APRIL/MAY 2016

(Regulation 2009)

Eighth Semester

AUTOMOBILE ENGINEERING

AUE122: Automotive Safety

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Vehicle should be designed to

   A Reduce the effect of collision B Increase collision

   C Minimum safety D High cost

2. The kinetic energy of the vehicle destroyed during a collision can be expressed as.

   A $KE=(m-\Delta m)*V^2/2$ B $KE=m*V^2/2$

   C $KE=\Delta m*V^2/2$ D $KE=((m-\Delta m)*V^2)/2$

3. One of the example for active safety system is _____

   A Seat belts B Fuel pump kill switches

   C Anti-lock braking system D Air bags

4. The steering column can ----------most of the energy received at the front of the vehicle in the event of a crash.

   A absorb B produce

   C reflect D radiate

5. Airbag module deployments are triggered through a ---------- process

   A exothermic B pyrotechnic

   C endothermic D isobaric process

6. Which of the following is not a cause and contributing factors of Rear-End Car Crashes

   A Driver Distractions B Tailgating

   C Hazardous weather conditions D Slow speed driving

7. The perceptibility of a safety system is defined as the extent to which the system can be perceived by

A controller B senses or the mind

C actuator signals D air bag

8. A braking Control System is includes----------

A Braking force B Object detector

C Position sensor D Speed

9. Passive keyless entry systems mean---------

A the driver need to press a button to unlock the vehicle B the driver doesn't even need to press a button to unlock the vehicle

C safety system D accident avoider

10. Working principle of rain sensor is----------

A light density B reflected light

C relay D temperature

PART B (10 x 2 = 20 Marks)

(Not more than 40 words)

11. How the engine location will help for safety system?
12. What is mean by crumble zone?
13. Compare and contrast Active safety and passive safety.
14. Describe the deformation behavior of vehicle body?
15. State the role of seat belt in reducing accidents.
16. Mention the function of inflator used in airbag.
17. Draw the layout of object detection technology.
18. Outline the function of radar in collision warning system.
19. List out the systems that are purely enhancing the comfort and convenience of the passengers in a vehicle.
20. State the principles of environment information system.

PART C (5 x 14 = 70 Marks)

21. a) Elaborate the various aspects of designing a passenger car body for safety with neat sketch.

(OR)

b) i) Discuss the concept of crumble zone and its effects on safety. (7)

ii) Interpret the concept of safety sandwich construction. (7)

22. a) Summarize the Active safety concepts of driving safety and conditional Safety.

(OR)

b) Demonstrate the speed and acceleration characteristics of passenger compartment on impact with the relevant sketches.

23. a) i) Illustrate the construction and working of automatic seat belt tightener system with neat sketch. (7)

ii) With a schematic diagram explain the concept of bumper design for safety. (7)

(OR)

b) With the aid of a circuit diagram, explain an electronic activating system for deployment of air bag and the working of the air bag system.

24. a) Name the various gadgets used for collision warning and explain the working of any two them.

(OR)

b) With a schematic diagram the working of object detection system with braking system.

25. a) Explain any four convenience system present in modern cars with relevant sketches.

(OR)

b) Explain in detail about the functioning of the tyre pressure control system with a neat sketch.

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