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**INTERNATIONAL CENTRE FOR APPLIED SCIENCES
(MAHE)**

III SEMESTER B.Sc. (Applied Sciences) MAKE -UP EXAMINATION – January 2022

SUBJECT: AUTOMOBILE ENGINEERING (IME 235)

(BRANCH: MECHANICAL)

Timing: 3 hours

DATE: 13th January 2022

Max. Marks: 50

- ✓ Answer All questions
- ✓ Missing data, if any, may be suitably assumed

- 1A** Compare the theoretical and actual valve timings diagrams of a 4-cylinder 4-stroke petrol engine which runs with a lead, lag, and overlap of 35°. (5)
- 1B** List and explain with appropriate sketches, the different methods used for controlling piston expansion. (5)
- 2A** Explain the significance of fuel injectors in comparison to carburetors. Also, explain any two types of fuel injection systems classified according to the location of placement of injectors. (5)
- 2B** Sketch & explain the working of a centrifugal advance ignition mechanism. (5)
- 3A** Sketch & explain the working of a clutch mechanism used in vehicles with high powered engines where clutch disengagement requires appreciable and tiresome driver's effort. (5)
- 3B** Explain the working of a torque converter with appropriate sketches. (5)
- 4A** Explain with appropriate sketches, the type of rear axle that is employed in trucks. (5)
- 4B** Explain the following phenomenon & their significance using appropriate sketches: (5)
- a. Toe-in
 - b. Positive Camber
 - c. Center point steering
- 5A** Considering a minimum of five parameters, differentiate between four different types of springs used in a suspension system. (5)
- 5B** Sketch & explain the working of a servo brake mechanism. (5)

