



THE COUNCIL OF COMMUNITY COLLEGES OF JAMAICA

ASSOCIATE OF SCIENCE EXAMINATION

SEMESTER I – 2015 DECEMBER

PROGRAMMES: AUTOMOBILE REPAIRS AND ENGINEERING

COURSE NAME: AUTO CHASSIS SYSTEMS II
CODE: (AUTO2303)

YEAR GROUP: TWO

DATE: FRIDAY, 2015 DECEMBER 18

TIME: 1:00 P.M. – 4:00 P.M.

DURATION: 3 HOURS

EXAMINATION TYPE: FINAL

This Examination paper has 5 pages

INSTRUCTIONS:

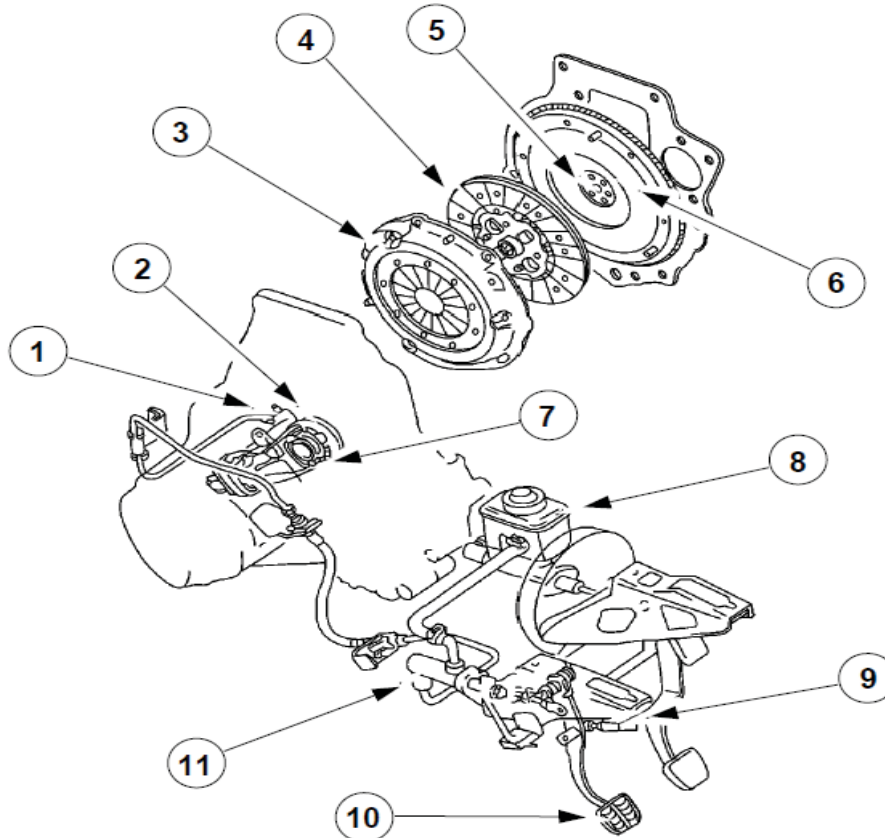
SECTION B: ANSWER ANY THREE (3) QUESTIONS FROM THIS SECTION.

SECTION B

*Instructions: Answer any **THREE (3)** questions from this section.*

Question 1

- a. The figure below shows a clutch operating mechanism. Identify the components labelled 1 to 11.



(11 marks)

- b. What type of operation mechanism is used in this system? *(2 marks)*

- c. Explain the function of the **four (4)** main components of an ABS system listed below:

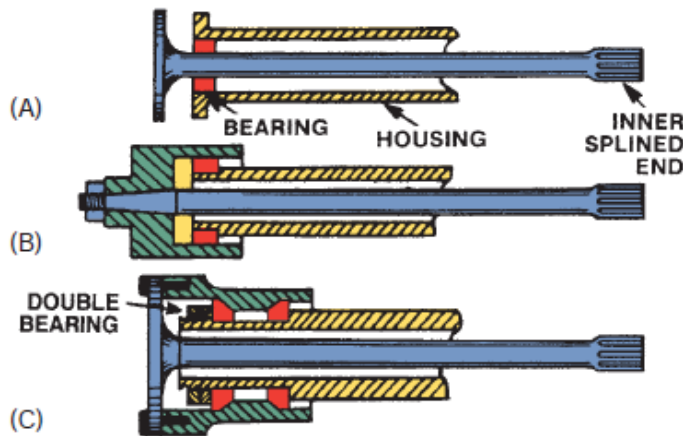
- i. Speed sensors
- ii. Pump
- iii. Valves
- iv. Controller

(12 marks)

(Total 25 marks)

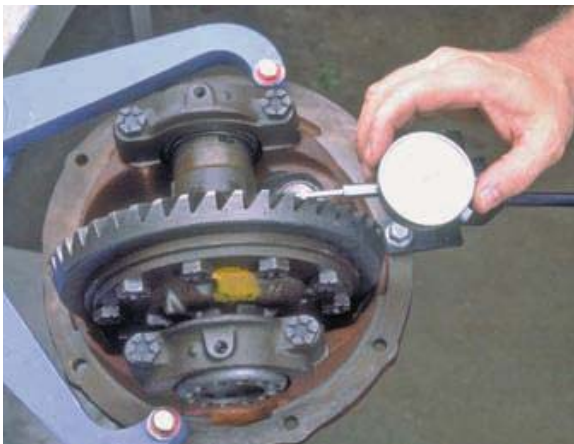
Question 2

- a. What is the purpose of axle shaft in the transmission process? **(3 marks)**
- b. State **two (2)** types of axle shafts and explain their differences. **(6 marks)**
- c. Identify each of the driving axles in the diagrams below.



(3 marks)

- d. What activity is being carried out by the technician in the picture below?



(3 marks)

- e. List **six (6)** functions of the suspension system **(6 marks)**
- f. List the **four (4)** types of springs used on motor vehicles **(4 marks)**

(Total 25 marks)

Question 3

- a. Explain the purpose of power steering system on motor vehicles. *(4 marks)*
- b. What is meant by excessive Steering-Wheel Play *(2 marks)*
- c. Give **five (5)** causes of excessive steering wheel play *(5 marks)*
- d. i. Identify the component below and state what type of drive belt is usef with it. *(6 marks)*



- ii. List **two (2)** other types of drive belts. *(2 marks)*
 - e. A customer complains of having difficulty steering (extra effort needed to turn steering). List **six (6)** possible reasons for this problem. *(6 marks)*
- (Total 25 marks)*

Question 4

- a. Why are metering and proportioning valves used in the hydraulic braking system fitted with disc brakes and drum brakes *(2 marks)*
 - b. Explain the operation of the metering Valve and the proportioning valve. *(18 marks)*
 - c. Explain why a height-sensing proportioning valve is required on some vehicles. *(5 marks)*
- (Total 25 marks)*

Question 5

- a. What is the purpose of the torque converter? *(1 mark)*
- b. Identify the **four (4)** basic parts of the torque converter *(4 marks)*
- c. Describe the purpose and operation of a simple planetary gear system. Include in your operation, gear reduction, direct drive, overdrive, reverse and neutral. *(8 marks)*
- d. Give the purpose of clutches and bands in the automatic transmission *(4 marks)*
- e. State the purpose of the valve body in an automatic transmission *(4 marks)*
- f. Explain the purpose of using a governor in an automatic transmission *(4 marks)*

(Total 25 marks)

END OF EXAMINATION