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071605T4AUT**AUTOMOTIVE TECHNICIAN LEVEL 5****ENG/OS/AUT/CR/4/5/A**
SERVICE VEHICLE TRANSMISSION SYSTEM**July/Aug 2025**

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**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

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WRITTEN ASSESSMENT**TIME: 3 HOURS**

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INSTRUCTIONS TO CANDIDATE

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1. The paper consists of **TWO** sections: **A** and **B**.2. Attempt **ALL** the questions in Section **A** and a nly **THRE** from Section **B**

3. You are provided with a separate answer booklet

4. **DO NOT** write on this question paper.

5. Do not write on the question paper.

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This paper consists of THREE (3) printed pages**Candidate should check to ascertain that all pages are printed as indicated and that no
page are missing.**

Turn Over

SECTION A (40 MARKS)

Answer all the questions in this section

1. The clutch is and disengages power transmission especially from a driving shaft to the driven shaft. List **four** components of a clutch. (4 Marks)
2. Outline **four** safety precautions to be observed while servicing and repairing transmission system of a vehicle. (4 Marks)
3. Many rear-wheel and four-wheel drive vehicles require a longitudinal propeller shaft that has to span a great distance between the gearbox and final drive. State **four** advantages of using tubular-section propeller shaft. (4 Marks)
4. The sets of gears used within the gearbox employ one or more type of gear teeth. List **four** types of gears used in the gearbox. (4 Marks)
5. A synchromesh is almost like a small clutch that sits on the output shaft between gears. Name **two** parts of synchromesh unit. (2 Marks)
6. An overdrive is an extra gear fitted in a gearbox. State **three** advantages of overdrive. (3 Marks)
7. The combination of a torque converter with an automatic gearbox forms an automatic transmission system. State **two** functions of a torque converter. (2 Marks)
8. Diaphragm spring clutch is more common compared to cone clutch. State **four** advantages of the diaphragm spring clutch. (4 Marks)
9. Transmission system employs use of different types of gears according to their specification. State **three** possible causes of noise in a manual gear box. (3 Marks)
10. A final is fitted between the propeller shaft and the half shafts in a rear wheel drive vehicle. Outline **two** functions of the final drive. (2 Marks)
11. Automatic gearboxes use several devices to determine the speed of the output shaft. Highlight **three** devices used. (3 Marks)
12. A universal joint is located where be joined to transmit torque. State **five** requirements of a universal joint. (5 Marks)

SECTION B (60 MARKS)

Answer any **THREE** questions from this section

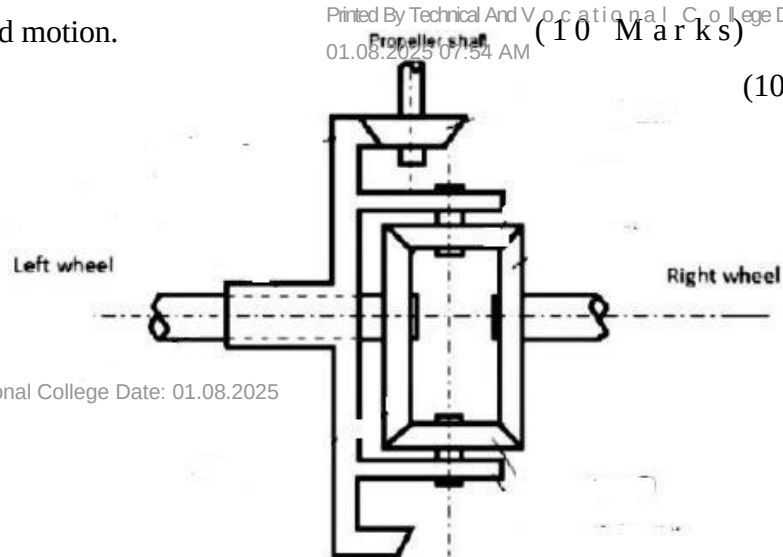
13. a) The use of correct tooling the transmission system is considered crucial. Outline **four** tools that are used to service a vehicle gear box. (4 Marks)

- b) The general layout of a constant-mesh is very similar to that of a sliding-mesh gearbox. With the aid of a diagram, explain the operation of a 4 speed constant mesh gearbox. (16 Marks)

14. Using the diagram below, explain the operation of a differential unit during;

i. Straight ahead motion.

ii. Cornering



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15. a) For a transmission system to function well, it must meet certain requirements. Briefly explain **eight** conditions that a vehicle transmission system must satisfy. (8 Marks)

- b) Faults in the clutch assembly can become apparent due to the loads and forces from the engine and transmission during operation. Discuss **four** common clutch faults indicating **three** causes of each fault. (12 Marks)

16. a) During your attachment period in a workshop, a school van is brought into the workshop and the owner is complaining of noisy transmission system. State **four** safety precautions while servicing and repairing transmission system of a vehicle. (4 Marks)

- b) Explain the functions of the **three** main components of the torque converter. (6 Marks)
- c) Using a well labeled diagram, describe the operation of a fluid fly wheel in a vehicle transmission system. (10 Marks)