

MVM – Transmission

T135

Friday, 13/11/2015

08:30 – 11:30

WORKFORCE DEVELOPMENT AUTHORITY



P.O. BOX 2707 Kigali, Rwanda Tel: (+250) 255113365

**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2015,
TECHNICAL AND PROFESSIONAL TRADES**

EXAM TITLE: Transmission

OPTION: Motor Vehicle Mechanics (MVM)

DURATION: 3hours

INSTRUCTIONS:

The paper is composed of **three (3) Sections:**

Section **I:** Sixteen **(16)** questions, all **Compulsory.** **55marks**

Section **II:** Five (5) questions, **Choose Three (3) only.** **30marks**

Section **III:** Three (3) questions, **Choose only One (1).** **15marks**

Every candidate is required to strictly obey the above instructions. Punishment measures will be applied to anyone who ignores these instructions.

Section I. Sixteen (16) Compulsory questions.

55marks

- 01.** Define the terms below and give one example that combines the two definitions:
a) vehicle
b) Motor vehicle. **3marks**
- 02.** List five qualities of a good clutch facing. **5marks**
- 03.** Which two forces help to keep the pressure plate firm with flywheel at normal and high speeds in semi centrifugal clutch? **2marks**
- 04.** Which type of clutch is used:
a) in constant mesh gearbox?
b) As a part of the automatic transmission? **2marks**
- 05.** Why is a clutch necessary? **4marks**
- 06.** One of the factors on which the torque transmitted by the clutch depends is size of the clutch plate. Name three others factors. **3marks**
- 07.** State four advantages of synchromesh gear box. **4marks**
- 08.** Name three types of universal joints used in vehicle. **3marks**
- 09.** How many joints have the simple open propeller shaft and what sorts are they? **3marks**
- 10.** What are the three types of gears used for the final drive? What will be the final drive ratio if the crown wheel has 35 teeth and the pinion has 7 teeth? **4marks**
- 11.** What is a rear axle "breather" and why is it necessary? **3marks**
- 12.** Name the various types of springs used for automobile suspension systems. **4marks**
- 13.** Give any three main functions of the wheel. **4marks**
- 14.** If the wheels of a car wobble, what are the likely causes? **3marks**
- 15.** What is wheel alignment and what is its purpose? **5marks**
- 16.** One of the types of brake adjusters used in vehicles is serrated wheel type. Name the other three types of brake adjusters used? **3marks**

Section II. Answer any three (3) questions of your choice

(Do not choose more than three questions). 30marks

17. a) What are the types of automatic differential lock?

b) State the operating principle of differential:

(i) Straight ahead driving

(ii) Cornering

10marks

18. My steering system pulls on one side during driving, list the possible causes.

10marks

19. With net sketch list the parts of dual master cylinder.

10marks

20. List any ten (10) alignment tools and equipments.

10marks

21. a) Explain briefly dynamic Wheel balancing process.

b) Explain briefly the brake bleeding process.

10marks

Section III. Answer any one (1) question of your choice

(Do not choose more than one question). 15marks

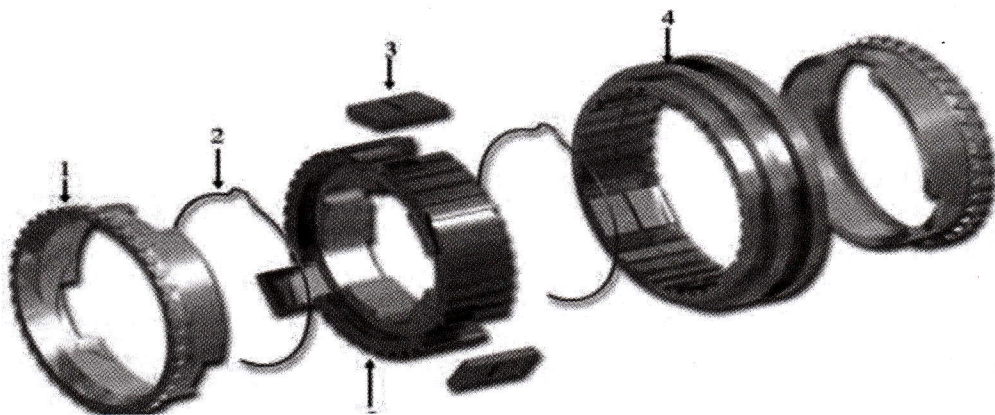
22. List any ten (10) precautions to be applied when using a tire changer.

15marks

23. A customer brings a car for rear right wheel puncture repair: You have to change a tire tube by a new one using Tire changer. Explain briefly the whole process.

15marks

24. a) Name the parts labeled 1 up to 5 in the figure below:



b) By using a table, list four faults of manual gear box, symptoms, possible causes and remedies.

15marks