END TERM 3 2026

GRADE 10

POWER MECHANICS

SUMMATIVE ASSESSMENT

TIME: 2 HOURS 30 MINUTES

Name: _____

Assessment Number: _____

Class / Stream: _____

Date: _____

INSTRUCTIONS

1. Answer ALL questions.

2. Read each question carefully and show all working where applicable.

3. Use appropriate technical drawing instruments where a construction is required.

4. All sketches and diagrams must be clear and well labelled.

5. Use the spaces provided.

SECTION A — FUNDAMENTALS OF POWER MECHANICS (30 MARKS)

1. Overview and evolution of power mechanics **(8 marks)**

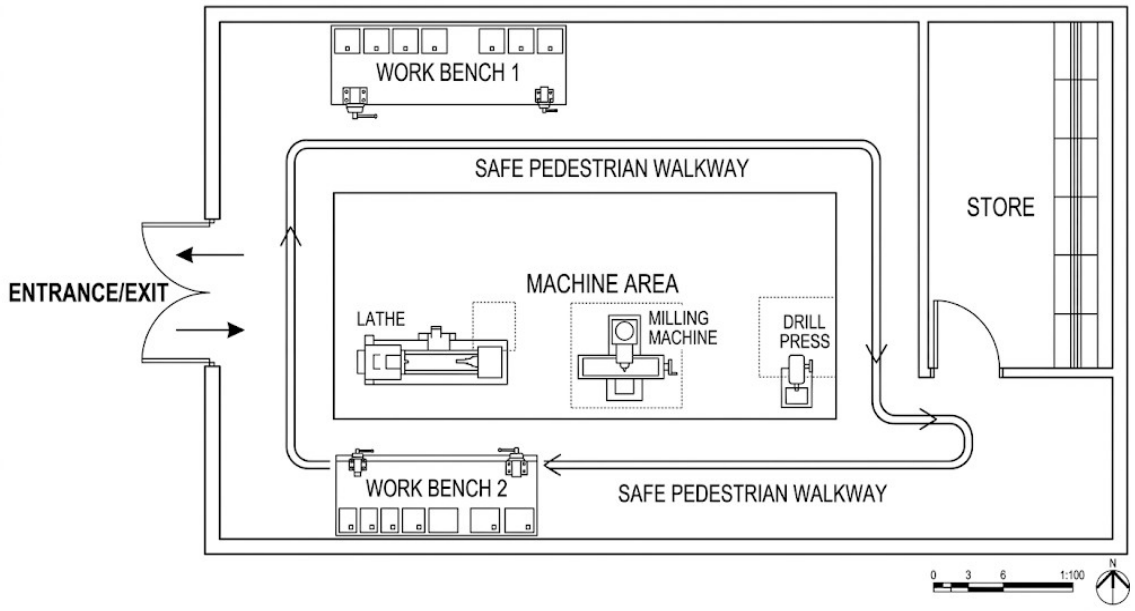
(a) Define Power Mechanics as a learning area. **(2 marks)**

(b) State two opportunities for further study or careers related to power mechanics. **(2 marks)**

(c) State two ways in which power mechanics contributes to society. **(2 marks)**

(d) State two important developments in the historical evolution of motor vehicles. **(2 marks)**

2. Power mechanics workshop layout**.**



(a) Identify four main areas that should be considered in a power mechanics workshop layout. **(4 marks)**

(b) State two reasons why a good workshop layout is important. **(2 marks)**

(c) State two safety considerations when arranging workshop floor markings. **(2 marks)**

3. General workshop rules and regulations **(7 marks)**

(a) State three general safety rules applicable in a power mechanics workshop. **(3 marks)**

(b) State two behaviours that should be avoided in a power mechanics work environment. **(2 marks)**

(c) Name two items of personal protective equipment (PPE) and state the purpose of each. **(2 marks)**

4. Safety signs and PPE **(7 marks)**

(a) Differentiate between prohibition, mandatory, warning and fire-equipment signs. **(4 marks)**

(b) State three situations in which PPE is necessary in a power mechanics workshop. **(3 marks)**

SECTION B — RELATED TECHNICAL DRAWING (25 MARKS)

5. Diagonal scale**.**

(a) State the purpose of a diagonal scale in technical drawing. **(2 marks)**

(b) Construct a diagonal scale capable of measuring metres, decimetres and centimetres for a representative scale of 1:10. Clearly show the construction and subdivisions. **(5 marks)**

(c) State two applications of diagonal scales. **(2 marks)**

6. Loci in power mechanics**.**

(a) Define a locus in technical drawing. **(2 marks)**

(b) Name two types of loci that may be used in technical drawing. **(2 marks)**

(c) Describe the procedure you would use to construct the locus of point P in the mechanism shown. **(4 marks)**

7. Tangency and blending of lines and curves **(8 marks)**

(a) Define tangency. **(2 marks)**

(b) State two methods or constructions used when drawing tangents. **(2 marks)**

(c) Describe how to construct a tangent from a point outside a circle. **(4 marks)**

SECTION C — MOTOR VEHICLE SYSTEMS (25 MARKS)

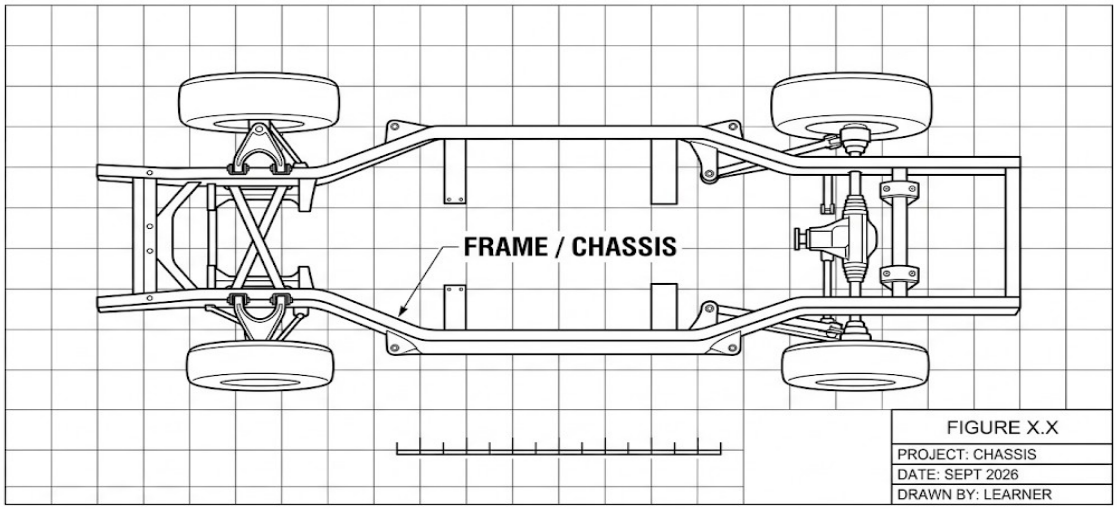
8. Road wheels and tyres **(8 marks)**

(a) State three functions of tyres on a motor vehicle. **(3 marks)**

(b) Explain how incorrect tyre pressure can affect road safety. **(2 marks)**

(c) State three basic tyre-maintenance practices. **(3 marks)**

9. Motor vehicle body and chassis**.**



(a) State three functions of a motor vehicle body. **(3 marks)**

(b) Name three types of chassis/frame sections used in motor vehicles. **(3 marks)**

(c) State three safety features incorporated into a motor vehicle chassis or body. **(3 marks)**

10. Motor vehicle body joining processes**.**

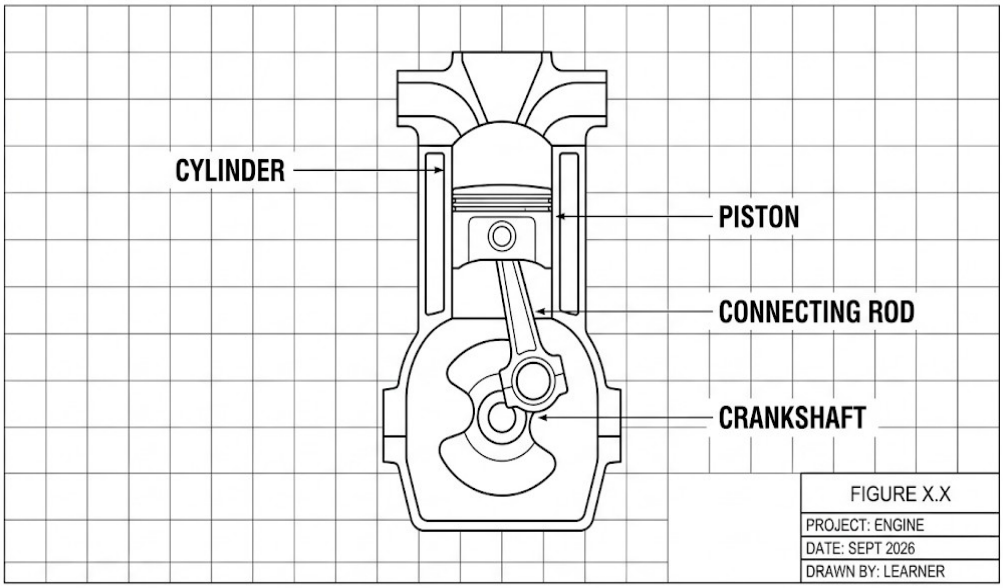
(a) Name four joining processes used in motor vehicle body work. **(4 marks)**

(b) State two examples of threaded fasteners used in motor vehicle body joining. **(2 marks)**

(c) State two advantages of using adhesives in motor vehicle body joining. **(2 marks)**

SECTION D — ENGINES (20 MARKS)

11. Introduction to engines and engine terminology **(7 marks)**



(a) Define an engine as used in power mechanics. **(2 marks)**

(b) State the meaning of bore, stroke and engine capacity. **(3 marks)**

(c) A cylinder has a bore diameter of 80 mm and a stroke of 90 mm. Calculate its swept volume using $V = \pi d^2 L/4$. Give the answer in cm^3. **(2 marks)**

12. Classification and types of engines **(6 marks)**

(a) State three methods of classifying engines. **(3 marks)**

(b) Distinguish between external combustion and internal combustion engines. **(2 marks)**

(c) Give one example of an engine classified according to fuel type. **(1 marks)**

13. Engine components and functions **(7 marks)**

(a) Name four major components of an internal-combustion engine. **(4 marks)**

(b) State the function of the crankshaft, camshaft and piston. **(3 marks)**

END OF QUESTION PAPER