MECHANICAL TECHNOLOGY

Dear Grade 12 Mechanical Technology learner

To succeed at the end of the year it is very important to continue learning and applying the prescribed key concepts of Mechanical Technology in the different themes and applying the theory in the making of the PAT.

Basic requirements for the subject
Textbook, calculator, drawing instruments, PPE.

Content Checklist
(Generic sections to be covered by all specialisations)

Safety (Generic)
- First Aid HIV/Aids Awareness
- OHS act, Machine specific Safety measures

Materials (Generic)
- Properties and Uses
- Methods of enhancing the properties of steel

Fitting and Machining

Terminology
- Indexing
- Dovetail slides
- Irregular work pieces
- Manufacturing a spur gear

Tools
- Principles and functions of engineering equipment
- Calculations on depth and screw thread micrometres

Forces
- Basic calculations on forces,
- Moments, Stress and strain

Maintenance
- Suitable preventative maintenance
- Coefficient of friction

Joining Methods
- Calculations on size of drills for bolts and nuts ISO metric
- Calculations on size of drills for bolts and nuts Square thread

Systems and control
- Mechanical components
- Velocity calculations
- Transfer of movement
- Hydraulics/Pneumatics

Automotive

Tools
- Application of diagnostic equipment

Engines
- Crankshafts
- Construction and operation of turbo chargers

Forces
- Automotive calculations

Maintenance
- Use test equipment to diagnose faults

Systems and control
- Operation and function of the Automatic gearbox, steering geometry
- Electricity

Welding and Metalwork

Tools
- Purpose-made tooling and equipment

Terminology
- Templates
- Calculations sheet metal
- Welding symbols application, Developments

Forces
- Forces and moments
- Steel frameworks
- Stress and strain

Maintenance
- Maintenance on various operating systems

Joining Methods
- Inspection of welds, Destructive tests
- Non-destructive tests, Distortion and stresses
- Effect of temperature on steel

ASSESSMENT

School Based Assessment 25% — **100 marks**
- **Term 1:** Assignment — **50 marks**
- **Term 2:** Practical Simulation Task — **200 marks**
- **Term 3:** Preparatory examination — **200 marks**
- **Total** — **450 converted to 100 marks**

Practical Assessment Task (PAT) 25%
(Automotive)
- **Term 1:** Phase 1 — **50 marks**
- **Term 2:** Phase 2 — **50 marks**
- **Term 3:** Phase 3 & 4 — **50 + 100 marks**
- **Total** — **250 converted to 100 marks**

'Practical Assessment Task (PAT) 25%
(Fitting and Machining and Welding and Metalwork)
- Phase 1: Manufacturing task — **50 marks**
- Phase 2: Manufacturing task — **50 marks**
- Phase 3 & 4: Manufacturing/ Final Assembly — **50 + 100 marks**
- **Total** — **250 converted to 100 marks**

Tips for Success
- Ask your teacher for the content framework for Grade 12 Mechanical Technology. This will give you the detailed content of Mechanical Technology. Paste it in your exercise book.
- Tick off every topic as it is taught in class, and write the relevant textbook page numbers next to the topic.
- Make sure you can manipulate formulas every week to solve problems.
- The school based assessment tasks and PATs prepare you for your final examinations.
- Make sure that you hand in all your tasks on time with attention to accuracy, detail and neatness.

WCED eportal:
https://wcedeportal.co.za/grade12-subject-support

Engines: Construction and operation of Turbo Chargers
https://qrgo.page.link/FtfFv