

**GME – Maintenance Technology**

**T079**

**Thursday, 22/11/2018**

**08:30 – 11:30 AM**

**WORKFORCE DEVELOPMENT AUTHORITY**



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**ADVANCED LEVEL NATIONAL EXAMINATIONS, 2018,  
TECHNICAL AND PROFESSIONAL STUDIES**

**EXAM TITLE: MAINTENANCE TECHNOLOGY**

**OPTION: General Mechanics (GME)**

**DURATION: 3 hours**

**INSTRUCTIONS:**

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

**Section I: Thirteen (13) compulsory questions. 55 marks**

**Section II: Attempt any three (3) out of five questions. 30 marks**

**Section III: Attempt any one (1) out of three questions. 15 marks**

**Note:**

***Every candidate is required to carefully comply with the above instructions. Penalty measures will be applied on their strict consideration.***

**Section I. Thirteen (13) Compulsory questions**

**55 marks**

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- 01.** What is the use of screw driver? List different types of screw drivers.  
**(4 marks)**
- 02.** What are the safety precautions you have to take care while using a screw driver?  
**(4 marks)**
- 03.** Outline the functions of Washers.  
**(5 marks)**
- 04.** Define clutch.  
**(2 marks)**
- 05.** Discuss about precautions to be taken when using v- belt.  
**(5 marks)**
- 06.** How spare parts can be classified?  
**(4 marks)**
- 07.** Explain the required maintenance to be done on chain drive.  
**(5 marks)**
- 08.** Proper selection of coupling for a particular use is the first step of efficient maintenance. List various factors the selection depends on.  
**(5 marks)**
- 09.** What are the methods used for measuring and identification the extent of wear?  
**(4 marks)**
- 10.** List at least 5 methods of corrosion minimization or protection.  
**(5 marks)**
- 11.** What are the essential points to be taken into consideration while using a reciprocating pump?  
**(4 marks)**
- 12.** What are the major causes of failure of pipes?  
**(4 marks)**
- 13.** State at least 4 factors to be considered for selection of an electrical motor.  
**(4 marks)**

**Section II. Choose and Answer any three (3) questions****30 marks**

14. Give the load – direction characteristics of the following bearings:
- a. Ball-Thrust Bearing
  - b. Double-row ball bearings
  - c. Spherical bearings
  - d. Tapered bearings **(10 marks)**
15. a. Give and describe the three types of fluid flow through centrifugal pumps.
- b. Define “pump stage”
- c. State three indications that a centrifugal pump is cavitating. **(10 marks)**
- \* 16. State 10 principal enemies to bearings. **(10 marks)**
17. a. Give four gear-tooth wear types and define each one.
- b. The addendum diameter of a spur gear is 165 mm. Determine the module and the number of teeth if the dedendum diameter is 142.5 mm. **(10 marks)**
18. The following is the service check of malfunctions of mechanical parts of compressors. Complete it by the causes. **(10 marks)**

No	Symptoms	Causes
1.	Water in cylinders!	1. 2. 3.
2.	Overheated cylinder	1. 2. 3. 4. 5. 6. 7.



**Section III. Choose and Answer any one (1) question****15 marks**

19. Give steps for maintenance of a belt drive working in the following conditions:

- a. The driver (electrical motor) is supplied by a 220 -380V.
- b. The drive is protected by a guard.
- c. The motor as the driven machine are both mounted on rails and fastened by nuts.

**(15 marks)**

20. Complete the table of four basic gear types having shaft centers parallel

<b>Gear type</b>	<b>Shafts arrangement</b>	<b>Teeth arrangement</b>
1.		
2.		
3.		
4.		

**(15 marks)**

21. Complete the table for belt drive maintenance.

<b>Symptom</b>	<b>Probable Cause</b>	<b>Corrective Action</b>
Wear on belt sidewalls	1. 2. 3. 4.	1. 2. 3. 4.
Belt surface hard or stiff		
Grinding sound		
Belt squeals		

**(15 marks)**