ADVANCED LEVEL NATIONAL EXAMINATIONS, 2015, 
TECHNICAL AND PROFESSIONAL TRADES

EXAM TITLE: Technical Drawing and DCG
OPTION: General Mechanics (GME)
DURATION: 3 hours

INSTRUCTIONS:

The paper is composed of three (3) Sections:
Section I: Eleven (11) questions, all Compulsory. 55 marks
Section II: Five (5) questions, Choose Three (3) only. 30 marks
Section III: Three (3) questions, Choose only One (1). 15 marks

Every candidate is required to strictly obey the above instructions. Punishment measures will be applied to anyone who ignores these instructions.
Section I. Eleven (11) Compulsory questions.  55 marks

01. Where are the following drawing instruments used?
   a. Setsquares
   b. Irregular curves
   c. Brushes

02. Dimension properly the template below:

![Template Diagram]

03. Construct an angle of 60° using compass and ruler only.
    Describe the method used. Don’t erase construction lines.

04. Find the centre of a circle of 60 mm diameter by geometrical construction. Describe the way used. Don’t erase construction lines.

05. Complete the table of dimensions for drawing sheets:

<table>
<thead>
<tr>
<th>Format</th>
<th>Measurements in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>A0</td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td></td>
</tr>
</tbody>
</table>

06. Complete the table of lines used in technical drawing:

<table>
<thead>
<tr>
<th>Type of line</th>
<th>Thickness (mm)</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick continuous line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dash line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin dash/dot line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freehand line</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

07. Draw and dimension a cylinder of 40mm height, 20mm diameter in any three views.

08. Given are three views of an object in the First angle projection.
    Rearrange them in Third angle projection.
09. A long T-shaped bar is drawn below in two views. Redraw it and complete it by a revolved and a removed section.

10. Define:
   a. Hole basis system
   b. Shaft basis system

11. Draw circles of diameter 30mm and 50 mm with centres 50 mm apart. Draw an arc of radius 40 mm tangential to the above two circles. Describe the method used to draw the tangent.

Section II. Answer any three (3) questions of your choice
(Do not choose more than three questions). 30 marks

12. For the following object, using a drawing, show the inside details and make a section along a plane at your own proper dimension placement.

13. By drawing, make a sectioning of the following object.

14. By drawing, define the meaning of the dimensions placement to the objects below (The measurements are in Cm):

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15. With drawing, show the names of missing thread size parts of the object indicated with arrows below:

![Thread Diagram](image1)

16. Give any five basic draft tools/instruments and equipments used in drawing. 10marks

Section III. Answer any one (1) question of your choice (Do not choose more than one question). 15marks

17. An adjustment drawing is specified as follows: Φ50 H7/p6 H7 6° 30' 0' 6' +12
   a. Give the meaning of each element of the adjustment specification Φ50 H7/p6
   b. Calculate tolerance of clearance and functioning clearances
   c. Draw a sketch representing the intervals of clearance and their positions. 15marks

18. Draw in the first angle projection method the top, front and right views of the object shown in the figure below. Scale: 1:2. Dimension the drawing. 15marks

![Object Diagram](image2)

19. A – T – pipe connection consists of a vertical cylinder of diameter 30 mm and a horizontal cylinder of the same size. The axes of the cylinders meet at right angles. The axis of the horizontal cylinder is parallel to the vertical plane VP. Draw the front and top views of the cylinders and show the curves of intersection. Don’t erase the construction lines. 15marks