**ZIMBABWE SCHOOL EXAMINATIONS COUNCIL**
**General Certificate of Education Ordinary Level**

**TECHNICAL GRAPHICS** **4057/2**
PAPER 2 Mechanical and Building Drawing

**SPECIMEN PAPER** 3 hours

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Candidate Name……

Centre Number ……..……

Candidate Number……..……

**[Turn over**

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**TIME** 3 hours

**Instructions to Candidates**
Print your name, Centre number and candidate number in the spaces provided.
Answer **all** questions from **Section A** in the spaces provided and **two** questions from **Section B.**
All answers should be drawn accurately with instruments unless otherwise stated.
The number of marks is given in brackets [ ] at the end of each question or part question.
Drawing aids may be used. Colour should only be used if asked for in the question. Dimensions not given are left to your discretion.

| For Examiner's Use | |
|---|---|
| SHEET | |
| 1 | |
| 2 | |
| 3 | |
| 4 | |

Candidate Name ……

Centre Number ……

Candidate Number ……

**[Turnover**

## Section A

Answer **all** questions

### Question 1

Complete the table below giving the meaning of each abbreviation. An example is given for you in **(i).**

| | **Abbreviation** | **Description** |
|---|---|---|
| **(i)** | RWP | rodding way |
| **(ii)** | RW | |
| **(iii)** | CI | |
| **(iv)** | GEP | |
| **(v)** | SVP | |
| **(vi)** | RC | |

[5]

**Question 2**

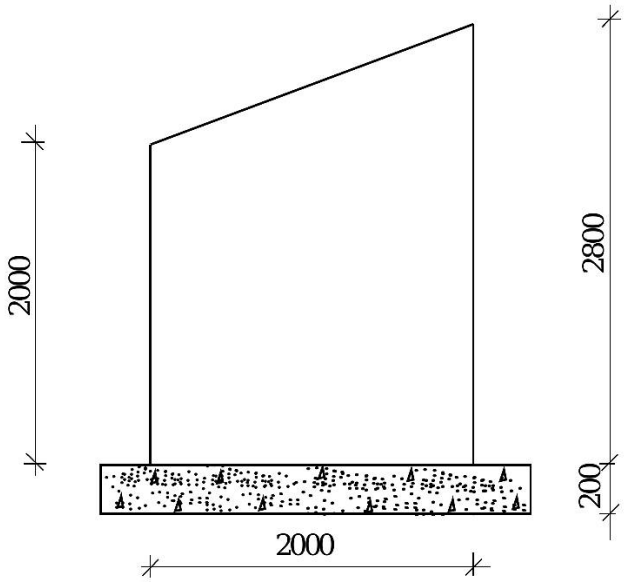
Make a neat sketch of a **three** pin electrical plug and label the following parts:

Earth wire, neutral wire, live wire, fuse, fuse holder, cable holder and cable protective cover. [5]

**Question 3**

A display wall built of a full brick thick wall is shown in **Fig.3**. The wall is erected on a **200 mm** thick concrete slab.

Calculate the number of bricks used on this wall given that **104** bricks are required on **one square metre**. [5]




[5]

**Fig.3**

**Question 4**

**Two** orthographic views in **Fig.4** represent part of a mounting. Draw, **full size**, its oblique view with face **F** as the true face.

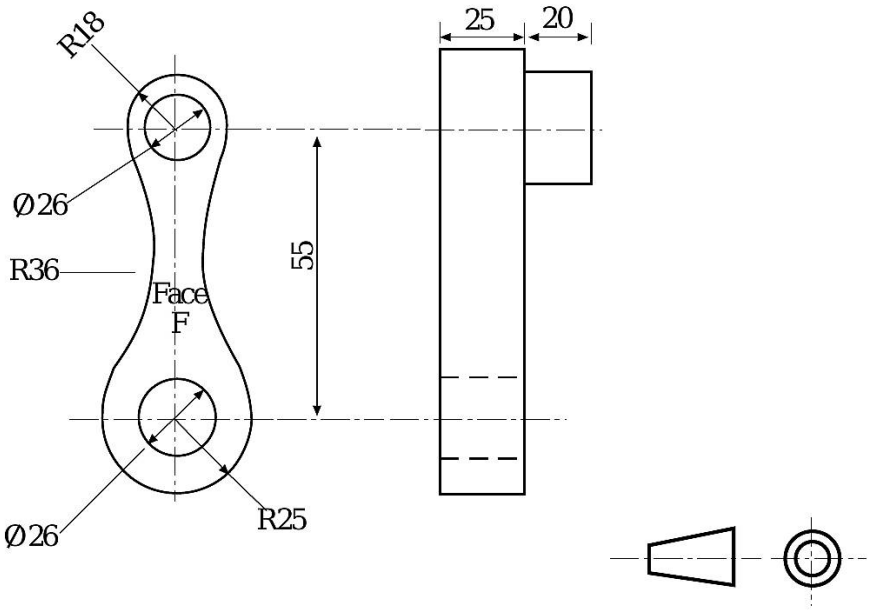



**Fig.4**

**SHEET 2 OF 6**

**Question 5**

Draw sketches to illustrate the following engineering items:

**(i)** Boss,

**(ii)** Counter bore,

**(iii)** Spot face,

**(iv)** Counter sunk,

**(v)** Fillet.

**Question 6**

**Fig. 6** is a pictorial view of a casting. Draw, **full size**, a sectional view as seen in the direction of cutting plane **X-X.** [5]

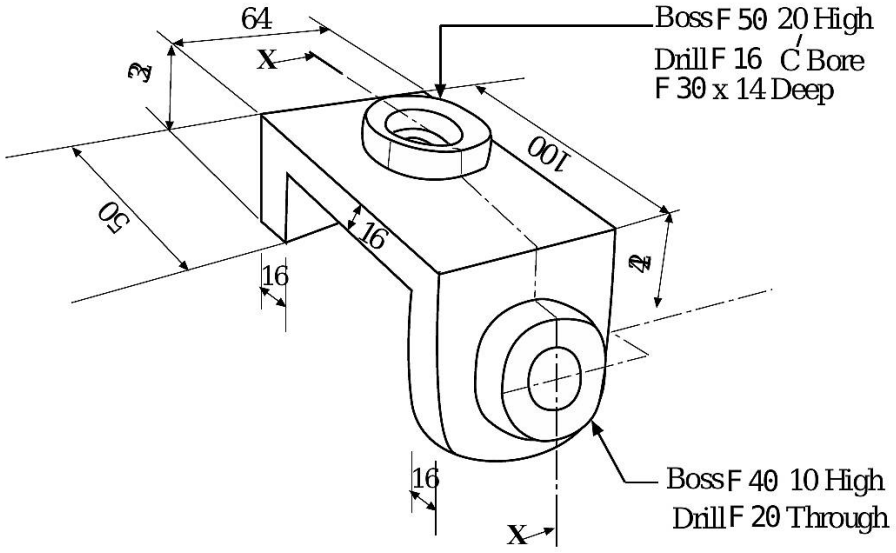



**Fig. 6**

**SHEET 3 OF 6**

## Section B

Answer **two** questions one from each option.

## OPTION 1 – Building Drawing

**Question 7**

**Fig.7** shows a sketch of a 3 bed-roomed house. Using the given specifications and schedules, draw, to a scale of **1:100**.

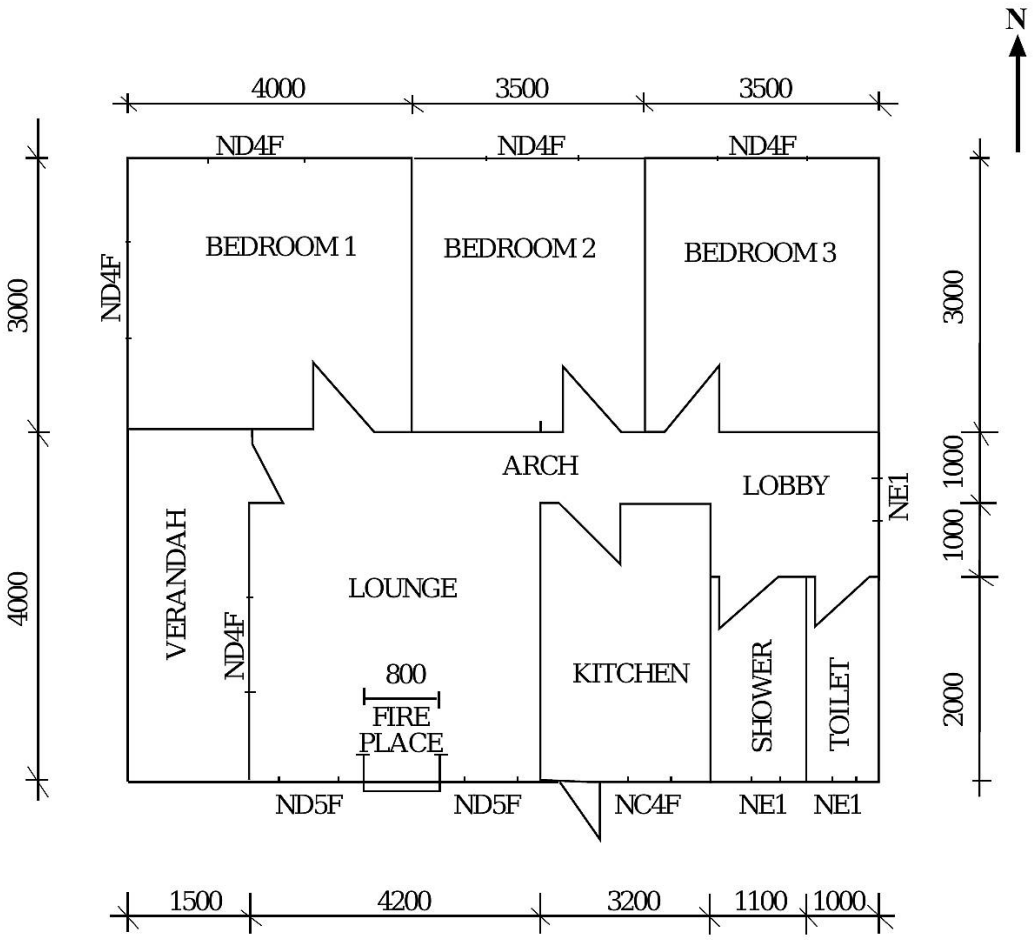
**(a)** a complete floor plan, [20]

**(b)** a south elevation projected in line with the plan in **(a)** above. [15]

**NB:** Measurements not given are left to your discretion.

**Specifications:**

| | | |
|---|---|---|
| **Floor:** | **-** | **40 mm** cement – sand screed on **100 mm** Concrete slab on **150 mm** hardcore |
| **Walls:** | **-** | **230 mm** external walls<br>**115 mm** internal walls |
| **Roof:** | - | Double pitched roof with **30º** pitch |
| | - | Timber trusses |
| | - | asbestos roof selecting |
| | - | wall plate **2700 mm** above ffl |
| **DPC** | **-** | **200 mm** above ground level |




**FLOOR PLAN**

**Fig.7**

**SHEET 4 OF 6**

**Question 8**

A sketch of a **two** bed-roomed house with a flat roof and parapet walls is shown in **Fig.8.**

The arrows indicate the direction of slope of the roof:

**(a)** draw a detailed plan to a scale of **1:100,**

**(b)** draw section **A-A** to scale of **1:50**. [35]

**NB:** Use your discretion where measurements are **not** given.

**Specifications**

**Foundation** : **690 mm x wide** by **230 mm** thick strip foundation of mass concrete **700 mm** below natural ground level

**Walls`** : All external walls to be **230 mm** thick and all internal walls to be **115 mm** thick. Height from flushed floor level to wall plate is **2 800 mm.**

**Floors** : Consists of a **100 mm** thick concrete slab laid over **150 mm** thick hardcore and finished with **50 mm** thick screed.

**Roof** : Pitch **12°**

Use door and window schedule provided.

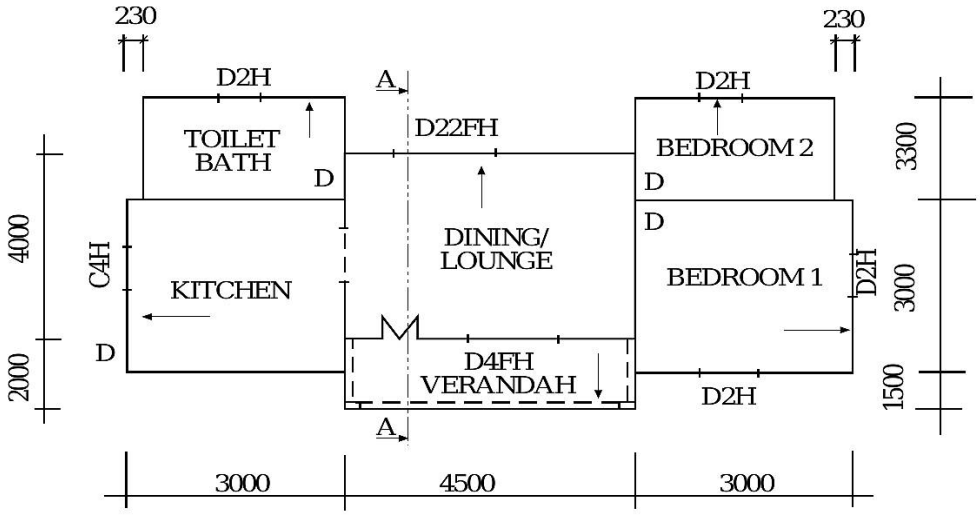



**Fig.8**

**SHEET 5 OF 6**

**OPTION 2 : Mechanical Drawing**

**Question 9**

Details of an adjusting device used in a laboratory are given in **Fig. 9**.

The device is assembled as follows:

The threaded end of a pivot bar **(Part 1)** is inserted into the Ø **20** hole of the **L**- bracket (Part2) from the **A** side **(see plan).** The spacer **(Part 3)** is then inserted into the protruding threaded pivot end. The pivot arm **(Part 4)** is in turn slotted through the same pivot end and aligned on the square shoulder of the pivot bar. The pivot bar must lie horizontal to the **L-bracket.** The **three** parts **1,2**; and **4**are held in place by means of a **washer** and an **M12** nut both (**not shown)** which fits into the threaded end of the pivot bar. The adjustinghandle **(Part 5)** is screwed into the **M10** hole of the pivot arm.

**(a)** draw, a sectional view along plane **B-B,** making sure the adjusting handle is turned in a position that makes its shape clear.

**(b)** draw, a parts list.

Scale **1:2**

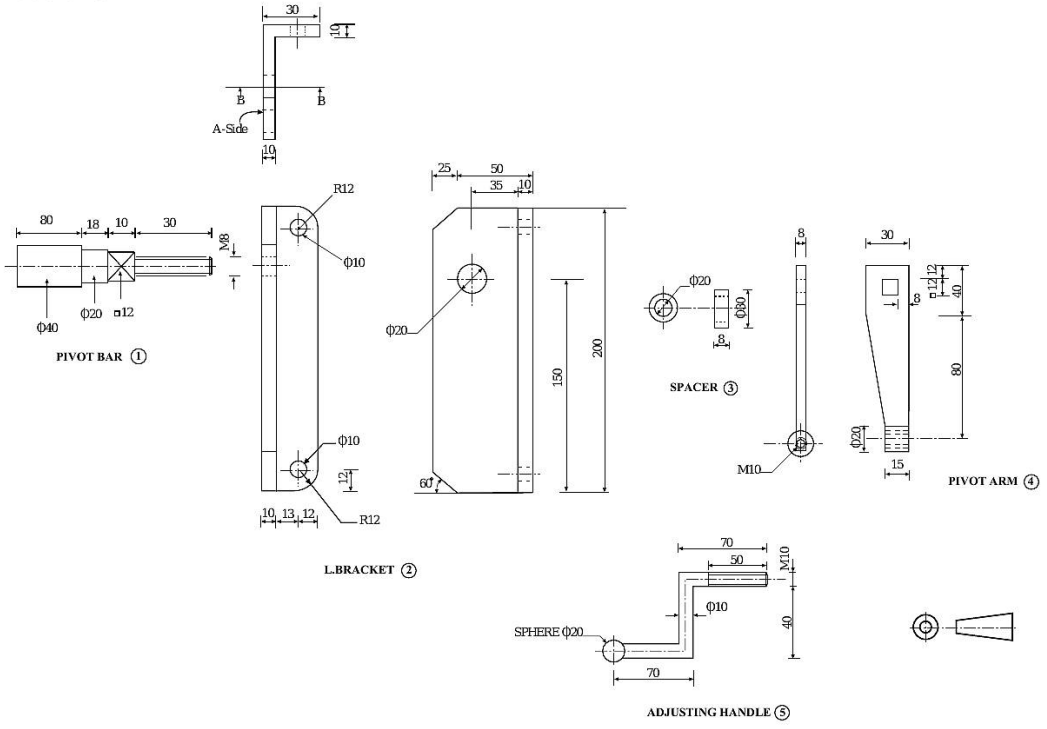



**Fig.9**

**SHEET 6 OF 6**

## Question 10

**Fig.10** shows parts of a magnifying glass used in a school laboratory.

The parts are assembled as follows;

The swivel arm **(3)** is fitted into the stem **(2)** and secured by the thumb screw **(6).** The extension arm **(4)** is joined to the swivel arm **(3)** and locked by the grub screw **(7).** The magnifying glass **(5)** is screwed into the **M6** hole of the extension arm **(4)**. This sub assembly is then screwed into the **M8** hole of the base **(1)**.

With all the parts assembled, the extension arm inclined at **15°** to the horizontal, draw, the front elevation showing the full circumference of the magnifying glass.

Use a scale of **1:3** [35]

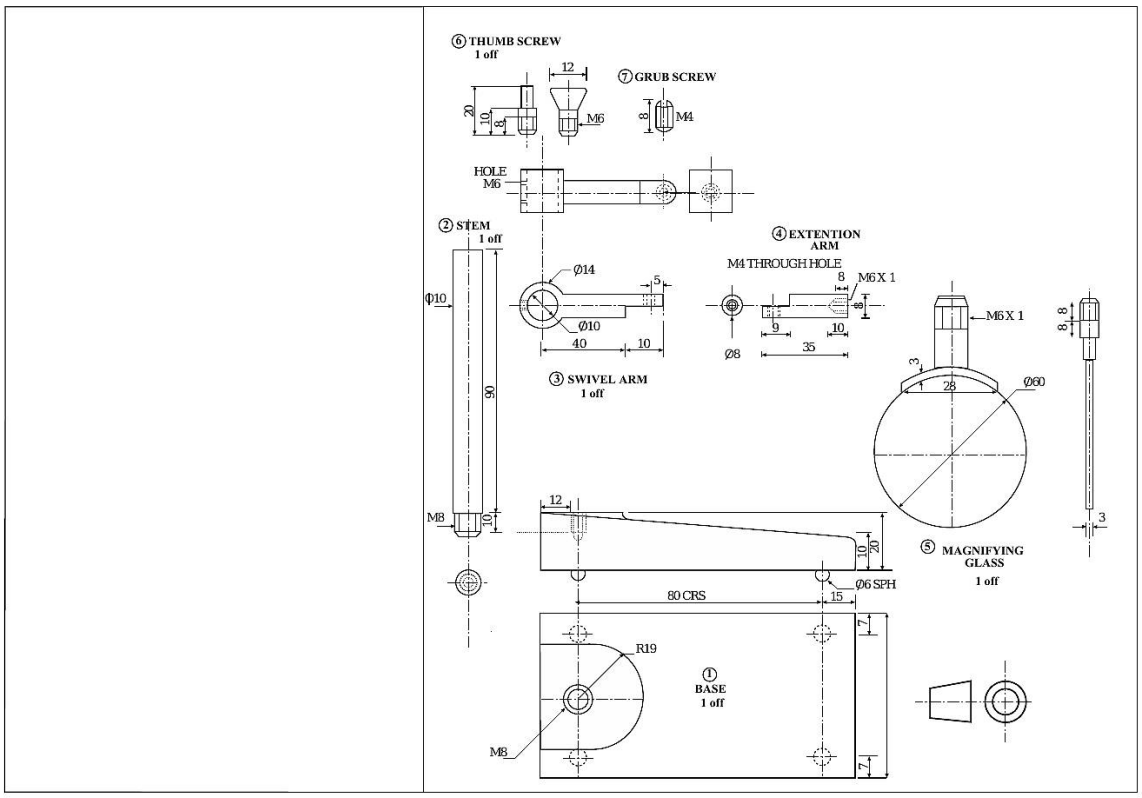



**Fig.10**