

# PHYL201

## Applied Exam-1

Duration: 40 minutes

Total: 6 points

Name & Surname:

Student ID:

Lab section:

Table #:

Date:

Signature of the  
student

As the instructor of this Lab Section I confirm that the student has participated in and completed the applied exam on time.

Stamp of the PHYS  
Labs and signature of  
the instructor

*This page serves as proof of the fact that the student participated in and completed the applied exam, only if it is submitted in time and accepted by the Lab instructor. The student and the instructor shall sign it along with the stamp of the Physics Laboratories.*

**Complete this examination YOURSELF! Be careful about units, significant figures. You shall show all your formulae & calculations explicitly and express your final answers clearly.**

## AE.1: AMMETERS

Construct an ammeter using a galvanometer and test it!

Note the number written on your galvanometer **or NO CREDITS!**

<b>Galvanometer Number</b>	
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Q-1) Read the values below from the relevant device or given graph on the table. (Device specs are given below or on the device) Note them correctly! (1 p)

- a) Internal resistance of the Galvanometer (below the Galvanometer)  $R_G =$
- b) Max. Galvanometer Current (below the Galvanometer)  $I_G =$
- c) Range Current for the Constructed Ammeter  
(read the graph, the value that corresponds to your  $R_G$  value):  $I_R =$
- d) Resistance per unit length of the Copper Wire (on the board)  $\rho_{cw} =$

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Q-2) Draw the Circuit inside an ammeter: (0.5p)

Q-3) Calculate the following (Show your formulae & calculation explicitly!)

- a) Shunt Resistance (0.8p)

$$R_S =$$

- b) Length of the Copper Wire required (0.4p)

$$L =$$

## AE.1: AMMETERS

Q-4) Draw the test circuit in which the constructed ammeter will be used: (0.5p)

Q-5) Construct an ammeter by cutting L+2.0 cm of copper wire and connect it to the galvanometer in the correct way. Test the constructed ammeter in the test circuit, setting  $R_{\text{box}}$  to 2 or 3 ohms. Use 500mA scale of the real ammeter.

a) Value read from the **Galvanometer**: (0.2 p)

$$G_x =$$

b) Calculate the corresponding current value read from the **Constructed Ammeter**: (1 p)

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$$I_{CA} =$$

c) Value read from a **Real Ammeter**, note the set  $R_{\text{box}}$  value (0.6 p)

$$I_{RA} =$$

$$R_{\text{box}} =$$

d) Calculate the percentage error for I (1 p) (Accuracy matters in this part!)

% Error

for  $I =$