

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 2142

GC-3

Your Roll No.....

Unique Paper Code : 32223901

Name of the Paper : Physics Workshop Skills

Name of the Course : **B.Sc. (Hons.) Physics – CBCS – Skill Enhancement Course**

Semester : III

Duration : 3 Hours

Maximum Marks : 50

Instructions for Candidates

1. Write your Roll No. on the top immediately on the receipt of this question paper.
2. Question No. 1 is compulsory.
3. Attempt five questions in all.

1. Attempt any five questions out of the following :

- (a) What is the least count of a screw gauge if the minimum linear scale division is 0.5 mm and circular scale markings are 200 divisions per 0.5 mm of the linear scale ?
- (b) Describe the use of sextant for measuring the height of a mountain ?
- (c) What are the different welding processes ?
- (d) A zener diode has $V_z = 15V$. The input voltage may vary from 22 V to 40 V and load current from 20 mA to 100 mA. To hold load voltage constant under all conditions, what should be the value of series resistance ?
- (e) Can a multimeter be used for measuring very low resistances ? What are the limitations in such measurements ?
- (f) What is the difference between a regulated and unregulated power supply ?

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- (g) On what principles of physics does an electrical relay works ?
- (h) Explain the working principle of a power generation system. (2×5=10)
2. (a) Explain the different manufacturing methods: Casting, Foundry, Machining, Forming and Welding ?
- (b) What are the basic types of welding joints ? Explain with appropriate diagrams. (5×2=10)
3. (a) Describe the advantages and disadvantages of welding over soldering. Compare the applications of both the processes.
- (b) Explain (i) drilling process and (ii) milling process. Under what circumstances would you use each of them ? (5×2=10)
4. (a) Describe the working of a regulated power supply.
- (b) Draw a diagram and explain the operation of a relay based electronic switch ? (5×2=10)
5. (a) Draw a diagram and explain how a wheel is connected to a gear system.
- (b) Draw block diagram of a cathode ray oscilloscope and explain in detail the electron gun and time-base. (5×2=10)
6. (a) State and explain five basic precautions that one should take in a workshop. What types of clothes are to be worn while working in a workshop ?
- (b) A lever is used to lift 500 kg load with an effort of 50 Kg. Draw diagram showing the positions of the effort, load and fulcrum clearly. Assume lever of length of 25 meters. Which class of levers are you using ? (5×2=10)
7. (a) What do you understand by (i) Fixed, (ii) Movable and (iii) Compound pulleys. Explain with an examples of each.
- (b) Describe in detail the working of a Timer circuit. (5×2=10)