

Roll No.:

--	--	--	--	--	--	--	--	--	--

Date:

--	--	--	--	--	--

NORTHWEST ACCREDITATION COMMISSION, USA
SR. SECONDARY/12TH
2017-2018

Subject- PHYSICS (PRACTICAL)

Question Paper No. :

P	H	2	2
---	---	---	---

Subject Code : PPH1204

Question Paper Code:

P	P	6	6
---	---	---	---

Total Time: 01.30 Hours.

Total Marks: 30

GENERAL INSTRUCTIONS

1. OPENING AND CHECKING OF THE QUESTION-BOOKLET

Break open the seal of the Question-Booklet only when the announcement is made by the Invigilator. After breaking the seal and before attempting the questions, student should immediately check for:

- a) The number of the printed page in the Question-Booklet is the same as mentioned on the cover page of the Booklet and
- b) Any printing error in the Booklet pages, if any.
Any discrepancy or error should be brought to the notice of the Invigilator who will then replace the Booklet. No additional time will be given for this.

2. No student, without the permission of the Superintendent, or the Invigilator concerned, is to leave his/ her seat or the Examination Room.

3. FILLING UP THE REQUIRED INFORMATION ON QUESTION-BOOKLET AND ANSWER SHEET

After breaking open the seal and checking the Booklet, student should:

- a) Fill up the **Question Paper No. and Question Paper Code** (mentioned on the cover of Question-Booklet) in the space provided on the First Answer Sheet.
- b) Fill up his/her Roll Number on the First Answer Sheet and on each Supplementary Answer Sheet, if taken.
- c) Student should mention the total number of **Supplementary Answer Sheet**, if taken, in the space provided on the First Answer Sheet and also fill up the Serial Number mentioned on each **Supplementary Answer Sheet** along with his/her Roll Number in the register maintained by the Invigilator. Student must tie all the Answer Sheets with the thread provided by the Invigilator.

4. INSTRUCTIONS ABOUT QUESTION PAPER

- a) This Question Paper includes five questions. All questions are compulsory.
- b) All questions are carrying six marks each in approximately 80-120 words.

5. Student found in possession of Cellular Phone / Mobile Phone / Pager or any other Communication Device and/or any Book/Note whether using or not, will be liable to be debarred for taking examination(s) either permanently or for specified period or/and dealt with as per law or/and ordinance of the School/SERI according to the nature of offence, or/and he/she may be proceeded against and shall be liable for prosecution under the relevant provision of the Statutory Law.

THE ANSWER SHEET IS TO BE RETURNED ON COMPLETION OF THE TEST

This Question Paper MUST be attached with Answer Sheet

- Question 1.** In a series LCR circuit connected to an a.c. source of voltage $v = v_m \sin \omega t$, use phasor diagram to derive an expression for the current in the circuit. Hence, obtain the expression for the power dissipated in the circuit. Show that power dissipated at resonance is maximum.

OR

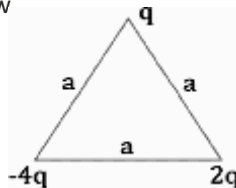
- (a) Distinguish with the help of a suitable diagram, the difference in the behavior of a conductor and a dielectric placed in an external electric field. How does polarised dielectric modify the original external field?
- (b) A capacitor of capacitance C is charged fully by connecting it to a battery of emf E . It is then disconnected from the battery. If the separation between the plates of the capacitor is now doubled, how will the following change?
- Charge stored by the capacitor.
 - Field strength between the plates.
 - Energy stored by the capacitor.

Justify your answer in each case.

- Question 2.** (a) Define a wavefront. How is it different from a ray?
- (b) Depict the shape of a wavefront in each of the following cases.
- Light diverging from point source.
 - Light emerging out of a convex lens when a point source is placed at its focus.
 - Using Huygen's construction of secondary wavelets, draw a diagram showing the passage of a plane wavefront from a denser into a rarer medium.

OR

- (a) Explain why, for a charge configuration, the equipotential surface through a point is normal to the electric field at that point. Draw a sketch of equipotential surfaces due to a single charge ($-q$), depicting the electric field lines due to the charge.
- (b) Obtain an expression for the work done to dissociate the system of three charges placed at the vertices of an equilateral triangle of side 'a' as shown below



- Question 3**
- (a) In Young's double slit experiment, describe briefly how bright and dark fringes are obtained on the screen kept in front of a double slit. Hence obtain the expression for the fringe width.
- (b) The ratio of the intensities at minima to the maxima in the Young's double slit experiment is 9 : 25. Find the ratio of the widths of the two slits.

OR

State Biot-Savart law. Use it to derive an expression for the magnetic field at the centre of a circular loop of radius R carrying a steady current I . Sketch the magnetic field lines for such a current carrying loop.

- Question 4.**
- (a) Deduce an expression for the frequency of revolution of a charged particle in a magnetic field and show that it is independent of velocity or energy of the particle.
- (b) Draw a schematic sketch of a cyclotron. Explain, giving the essential details of its construction, how it is used to accelerate the charged particles.

OR

Draw a labelled diagram of Van de Graaff generator. State its working principle to show how by introducing a small charged sphere into a larger sphere, a large amount of charge can be transferred to the outer sphere.

State the use of this machine and also point out its limitations.

- Question 5.** State Huygens's principle. Show, with the help of a, suitable diagram, how this principle is used to obtain the diffraction pattern by a single slit. Draw a plot of intensity distribution and explain clearly why the secondary maxima become weaker with increasing order (n) of the secondary maxima.

OR

- (a) Draw a labelled diagram of a moving coil galvanometer. Describe briefly its principle and working.
- (b) Answer the following:
- Why is it necessary to introduce a cylindrical soft iron core inside the coil of a galvanometer?
 - Increasing the current sensitivity of a galvanometer may not necessarily increase its voltage sensitivity.

Explain, giving reason.

Sample Paper