B.Sc. SEM IV Honours Examination, 2020

Subject Code - PHSA **Paper Code - CC9**

Full Marks - 10+25+15 = 50 **Duration - 2 Hours**

Modalities

1. An examinee shall not attend her/his college in person to sit for the examination of a practical paper. Examinee shall

   (a) write her/his answer with BLACK INK only.

   (b) must attach a scanned copies of her/his admit card of previous examination and the registration certificate at the end of the answer script.

   (c) scan the whole answer script in a single .pdf file. If it is instructed to use separate answer scripts for different modules/units, if any, examinee must do accordingly, but she/he shall create a single .pdf file for the answer script. There will be exactly one .pdf file for each examinee.

   (d) upload her/his answer script through proper web portal to submit.

2. The full marks and duration of examination of a paper shall be in accord with those specified by the University of Calcutta. The examination of a paper shall consist of three parts, viz., Internal Examination, Theory and Practical. An examinee must use separate answer scripts for the three parts but scan the whole answer script (answers, admit card and registration certificate) in a single .pdf file and upload.

3. For examinations of a practical paper, examinees need not submit their laboratory workbook, neither they have to face any viva. Examinees shall have to answer the questions following the instructions given in the question paper. Examinees shall use her/his own graph-papers to draw graphs (if any) in practical papers and attach them at proper positions of the answer script. Examinees shall draw circuits and graphs with BLACK INK only.

B.Sc. SEM IV Honours Examination, 2020

Subject Code - PHSA **Paper Code - CC9**

Internal assessment **Full Marks - 10**

Answer any five questions: (2×5)

1. What is Planck's quantum ?
2. What is Compton Scattering?
3. What are expectation values of observables?
4. Find out the approximate density of nucleus?
5. What is packing fraction?
6. What are magic numbers?
7. What is α decay?
8. What are Metastable states?

B.Sc. SEM IV Honours Examination, 2020

Subject Code - PHSA **Paper Code - CC9**

Theory **Full Marks - 25**

Answer any five questions: (5×5)

1. What is Blackbody Radiation?

2.What are Stationary States?

3. What is wave particle duality?

4. Prove that it is impossible of an electron being in the nucleus as a consequence of the uncertainty principle. (5)

5. Discuss about the nature of nuclear forces. (5)

6. Explain the origin of Surface energy term and asymmetry energy term in liquid drop model. (5)

7. Find out the relation between half-life and mean life of radioactive material. (5)

B.Sc. SEM IV Honours Examination, 2020

Subject Code - PHSA **Paper Code - CC9**

Practical **Full Marks - 15**

Answer any one question: (1×15)

1. Question regarding: "Determination of ionization potential of Mercury"

(a) What is ionization potential?

(b) What is Vacuum tube?

2. Question on Measurement of Planck's Constant using LED.

(a) What is Planck' constant ? What is its value?
(b) What is LED. State its basic principle.

3. What is photoelectric effect ? Who discovered it ? How does photo current vary with wavelength and intensity of light ?