Enrollment No…….

Master of Science (Physics)
Fourth Semester Main Examination, Aug-Sep 2020
Condensed Matter Physics-II [MSP401T]

Time: 3:00 Hrs **Max Marks 85**

Note: Attempt all questions.
Each question has two parts.
Part A is 10 marks and part B is 7 marks.

Q.1 (a) What is superconductivity? Explain the term critical temperature?
(b) Explain Meissner effect in case of super conductor.

OR

(a) What do you mean by AC and DC Josephson effect in super conductor?
(b) Derive London's Equations.

Q.2 (a) Explain eurie- weiss law for susceptibility.
(b) Write a short note on magnons.

OR

(a) Explain Quantum Theory of paramagnetism.
(b) Explain the domain for ferromagnetism.

Q.3 (a) Describe Schottky and Frenkel defects.
(b) Explain Burgers Vector.

OR

(a) Discuss point defects in crystal.
(b) Explain mechanism of plastic deformation.

Q.4 (a) Discuss various method of preparation of thin films.
(b) Explain chemical vapour deposition.

OR

(a) Explain the term surface topography.
(b) Sputtering method for preparation of thin films.

Q.5 (a) Explain wet chemical method.
(b) What are different method of preparation of nano materials.

OR

(a) What are electro deposition method.
(b) Define Surface Plasmon resonance.

Enrollment No…….

Master of Science (Physics)
Fourth Semester Main Examination, Aug-Sep 2020
Laser Physics [MSP402T]

Time: 3:00 Hrs **Max Marks 85**

Note: Attempt all questions.
Each question has two parts.

Part A is 10 marks and part B is 7 marks.

Q.1 (a) What are characteristics of laser beam? Mention its uses.
(b) Discuss laser pumping in two levels and three level systems.

OR

(a) Explain principle of laser and essential requirement to produce laser action.
(b) Discuss various properties of laser beam in details.

Q.2 (a) Explain different types of coherence properties in laser.
(b) Write note on resonators and explain their vibrational modes.

OR

(b) What is optical resonator? Discuss the vibrational mode of resonator.
(b) Distinguish between spatial & temporal coherence in laser emission.

Q.3 (a) Write construction and working of He:Ne gas laser using suitable diagram.
(b) Write a note on gas laser.

OR

(a) Explain construction & working of Nd-YAG laser.
(b) Explain reconstruction & working holography.

Q.4 (a) Explain laser holography, application & working of Co_2 laser.
(b) Discuss the application of laser in medicine.

OR

(a) Discuss various uses of laser in material processing.
(b) Explain reconstruction of image.

Q.5 (a) What do you mean by non-linear optics harmonic generation? Explain the process of harmonic generation.
(b) What do you mean by phase matching in non-linear optics?

OR

(a) What is self focusing of light?
(b) What is optical mixing?

Enrollment No……

Master of Science (Physics)
Fourth Semester Main Examination, Aug-Sep 2020
Computer Programming & Informatics [MSP403T]

Time: 3:00 Hrs **Max Marks 85**

Note: Attempt all questions.
Each question has two parts.
Part A is 10 marks and part B is 7 marks.

Q.1 (a) Explain algorithm and flow charts with suitable Example.
(b) Explain data types in C Language.

OR

(a) What do you mean by operators? Explain. Explain all types of operators with syntax.
(b) Write a short note on following:
(a) Keyboard (b) Couslant (c) variable

Q.2 (a) Explain following with syntax-
(a) If (b) If-else (c) while (c) Do-While
(b) Write a C Program to find factorial of given number.

OR

(a) What do you mean by conditional statement?
(b) Explain following with syntax and one example program-
(a) Switch case (b) For-loop
(b) Write C program to finds roots of a quadratic equation.

Q.3 (a) Define function. How many types of function? Explain
(b) Write short notes on following topologies
(i) Bus (ii) Ring (iii) Star (iv) Mesh

OR

(a) Explain Array. How many types of Array? Explain with syntax.
(b) What do you mean by Topology? Define following-
(a) Internet service provider (b) Email

Q.4 (a) Write a short notes on following-
i. LAN ii. WAN iii. MAN
(b) Write a short notes on protocol.

OR

(a) Write a short notes on following-
i. Terminals ii. Dialup connectivity iii. Client server

Q.5 (a) Explain following-
i. HTTP ii. IP Address
(b) Explain web browsers. Define any two web browser.

OR

(a) Write short notes on ordered and unordered list.
(b) Explain search engine and its types.

Enrollment No…….

Master of Science (Physics)
Fourth Semester Main Examination, Aug-Sep 2020
Communication Electronic [MSP404T]

Time: 3:00 Hrs **Max Marks 85**

Note: Attempt all questions. Each question has two parts.
Part A is 10 marks and part B is 7 marks.

Q.1 (a) Write note on DSBSC modulation.
(b) Define amplitude modulation and derive equation for AM wave.

OR

(a) What is the need modulation in communication system?
(b) Explain SSB modulation.

Q.2 (a) Explain satellite communication with diagram.
(b) Briefly explains link modules.

OR

(a) What do you understand from geo stationary satellite? Explain modules.
(b) Explain sky wave propagation.

Q.3 (a) Explain Fennal Zone. Problem used in microwave communication system.
(b) Why conventional electronic vacuum tube fail to operate at microwave frequency.

OR

(a) Write note on sampling theorem also explain low pass and bond pass signal.
(b) What is the difference between DBMS modulation & SSB modulation?

Q.4 (a) What is mean by quantization? Derive the expression for signal to quantization noise ratio in PCM system.
(b) Explain Pulse modulation system.

OR

(a) Explain adaptive delta modulation.

(b) Explain the terms natural sampling and flat top sampling.

Q.5 (a) Point out the probability of error for coherent and non- coherent scheme.

(b) Summarize the transmitter, Receiver and generation of non–coherent version of PSK (Short Note).

OR

(a) Write short notes on sampling theorem.

(b) Define satellite system.