Enrollment No……

Master of Science (Physics)

Fourth Semester Main Examination, June-2021

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) Write note on thermodynamic properties of superconductors?
(b) What do you mean by AC and DC Josephson effect in super conductor?

OR

(c) Explain superconductivity?
(d) Explain type I and type II super conductors.

Q.2 (a) Explain Quantum theory of paramangnetism.
(b) Explain the domain for ferromagnetism.

OR

(c) Explain Eurie- Weiss law for susceptibility.
(d) Define magnon. Derive an expression for dispersion relation.

Q.3 (a) Explain mechanism of plastic formation in Solids.
(b) Explain Burgers Vector.

OR

(c) Discuss point defects in crystal.
(d) Describe Schottky and frenkel defects.

Q.4 (a) Explain study of surface topography by multiple beam interferometer.
(b) Explain chemical vapour deposition.

OR

(c) Explain condition of accurate determination of step height and film thickness.
(d) Discuss various method of preparation of thin films.

Q.5 (a) Explain Electro- deposition method.
(b) Write down the properties of nano structural material.

OR

(c) Write a note on plasma chemical Vapour deposition method for preparation of nano material.
(d) Explain wet chemical method.

Enrollment No……

Master of Science (Physics)

Fourth Semester Main Examination, June-2021

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) Discuss various properties of laser beams in detail.
(b) Explain principle of laser and essential requirement to produce laser action.

OR

(c) What do you mean by Einestein A and B coefficient? Drive relationship between Einestein A and B cofficient.
(d) Discuss the condition of population inversion in three level leaser system.

Q.2 (a) What is optical resonator? Discuss the vibrational mode of resonator.
(b) Distinguish between spatial and temporal coherence in laser emission.

OR

(c) Explain different types of coherence properties in Laser.
(d) Discuss spatial coberence as related to the size of the source. Obtain expression for the lateral spatial coberence with and give its significance.

Q.3 (a) Explain the principle, construction and working of CO_2 laser.
(b) Write construction and working of He-Ne gas laser using suitable diagrams.

OR

(c) Describe the construction and working of ruby laser.
(d) Explain construction and working of Nd-YAG laser.

Q.4 (a) Explain reconstruction process of image in holography.
(b) Write down essay on laser applications.

OR

(c) Discuss various uses of laser in material processing.
(d) Explain reconstruction of image.

Q.5 (a) Write short note on Harmonic generation.
(b) What do you mean by phase matching in non-linear optics?

OR

(c) What do you mean by non-linear optics harmonic generation? Explain the process of third harmonic generation.
(d) Write a short note on Population inversion?

Enrollment No……

Master of Science (Physics)
Fourth Semester Main Examination, June-2021
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) What do you mean by operators? Explain. Explain all types of operators with Syntax?
(b) Explain data types in C Language.
OR
(c) Explain basic structure of c program
(d) Write a short note on following:
(i) Keyboard (ii) Constant (iii) Variable

Q.2 (a) What do you mean by conditional statement? Explain If, If-Else and If Else ladder statement with syntax.
(b) Write a C Program to find smallest of three number.
OR
(c) Write a C Program to find roots of a quadratic equation?
(d) What is Loop? Explain do, do-while and for loop with syntax.

Q.3 (a) Explain Array. How many types of Array? Explain with syntax.
(b) Explain call by value and call by reference with suitable program.
OR
(c) Define user define function and library function with syntax and example program.
(d) Define sprint (), stracpy (), strlen (), and str CMP ().

Q.4 (a) What do you mean by protocol? Define TCP/IP and FTP.
(b) What do you mean by Topology? Define Bus, Ring, Star, and Mesh topology.
OR
(c) What is E-mail? Explain working of e-mail.
(d) Write a short note on following
(i) Terminals (ii) Dial up connectivity (iii) LAN (iv) Client server

Q.5 (a) Explain search engine and its types. Define working of search engine.
(b) Write a short notes on ordered and unordered list and its attributes.
OR
(c) Define <p>,
, <ALIGN>, <Z>, <PRE>, and their attributes.
(d) Explain HTMP. Define <HTML>, <TITLE>, <HEAD>, <BODY>.

Enrollment No……

Master of Science (Physics)
Fourth Semester Main Examination, June-2021
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) Explain SSB modulation.

OR

(c) Define amplitude modulation and drive equation of AM wave?
(d) What is the need of Modulation in communication system.

Q.2 (a) What do you understand from geostationary satellite? Explain modules.
(b) Explain satellite communication with diagram.

OR

(c) Explain virtual height and fading signals.
(d) Explain the programming of waves.

Q.3 (a) Write note on programming of microwaves. Explain atmosphere effects of propagation.
(b) Explain Fennal Zone. Problem used in microwave communication system.

OR

(c) Why conventional electronic vacuum tube fail to operate at microwave frequency.
(d) Write the disadvantages of microwave transmission?

Q.4 (a) Explain PAM and channel BW for a PAM signal.
(b) Briefly explain flat top sampling.

OR

(c) Explain the terms natural sampling and flat top sampling.
(d) Explain adaptive delta modulation.

Q.5 (a) Explain the non-coherent detection of FSK signal and derive the expression for the probability of error.
(b) Write short note on sampling theorem.

OR

(c) Show the difference between coherent and non-coherent Scheme.
(d) Write short note on White noise.