

MANONMANIAM SUNDARANAR UNIVERSITY

DIRECTORATE OF DISTANCE AND CONTINUING EDUCATION

INTERNAL ASSIGNMENT FOR MAY 2024 EXAMINATIONS

M.Sc. Physics – First Semester

Mathematical Physics

Subject Code: SPHM11

- 1.) (A) Proof Cauchy's integral theorem and integral formula. Apply Cauchy Riemann's condition.

(OR)

(B) Solve

i.) Rank of matrix

ii.) Inners of matrix

iii.) Eigen value and vector

iv.) Proff Cayley Hamilton Theorem

$$\begin{pmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

- 2.) (A) Application of Fourier transform

i.) Flow of heat in infinite and semi-infinite medium.

ii.) Vibration of an infinite string and of a semi-infinite string.

(OR)

(B) Derive one-dimensional Green's function and reciprocity theorem.

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M.Sc. Physics – First Semester

Classical Mechanics and Relativity

Subject Code: SPHM12

- 1.) (A) Mechanics of single and system and system of particles and their their conservation laws in detail?

(OR)

- (B) Explain the D' Alembert principle and lagrangian equation of motion for a conservation system.

- 2.) (A) Derive canonical equation of motion using Hamilton's function. Explain any one application behind it.

(OR)

- (B) Derive Einstein's mass-energy relation and Explain length contraction and time dilation.

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M.Sc. Physics – First Semester

Linear and Digital ICs and Applications

Subject Code: SPHM13

1.) (A) Describe OP-AMP characteristics and DC, AC performance characteristics.

(OR)

(B) List out the application of OP-AMP. Both linear and non-linear application.

2.) (A) What is Active filter. Explain the following filter's

i.) Butterworth filters.

ii.) Low and high pass filters.

iii.) Band Reject and all pass filters.

(OR)

(B) Explain shift register and universal shift register using (IC 74194)

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INTERNAL ASSIGNMENT FOR MAY 2024 EXAMINATIONS

M.Sc. Physics – First Semester

Energy Physics

Subject Code: SPHE11

- 1.) (A) What are the basic principle of tidal power and ocean thermal energy conversion?

(OR)

- (B) What is the principles of wind energy conversion? Advantage and disadvantage of wind energy conversion.

- 2.) (A) Brief about the bio-gas generation. Aerobic and anaerobic digestion and their advantages?

(OR)

- (B) Define solar cell, solar cell parameters, solar cell electrical characteristic and efficiency.