D–8518

Sub. Code
34511

DISTANCE EDUCATION

M.Sc.(Physics) DEGREE EXAMINATION, MAY 2025.

First Semester

CLASSICAL MECHANICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define constraints.

2. State Kepler's law of planetary motion.

3. Explain the principle of least action.

4. Define Liouville's theorem.

5. What is Poisson bracket?

6. What is product of inertia?

7. Define Eulerian angles.

8. What is time dilation?

9. State small oscillations.

10. Write the secular equation for small oscillations.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Obtain the Lagrange's equation for a simple pendulum. Deduce the formula for its time period.

Or

(b) What is generalized co-ordinate? Explain.

12. (a) State and prove D'Alembert's principle.

Or

(b) Derive Hamilton's principle for a conservative system.

13. (a) Obtain an expression for equation of motion using Poisson's bracket.

Or

(b) Derive the Euler - Lagrange equation of motion using calculus of variation.

14. (a) Write a note on momental ellipsoid.

Or

(b) What is length contraction? Explain.

15. (a) Discuss the different types of equilibria with illustration.

Or

(b) Describe the theory on one dimension oscillator using small oscillation.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Derive Lagrangian equation for general system.

17. Deduce the Lagrangian equation of motion from Hamilton's principle.

18. Derive the Kinetic energy of a rigid body rotating about a fixed point.

19. Derive the Einstein's mass - energy relation.

20. Describe the two coupled oscillator experiment. Obtain the equation of motion.

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D–8519

Sub. Code
34512

DISTANCE EDUCATION

M.Sc. (Physics) DEGREE EXAMINATION, MAY 2025.

First Semester

MATHEMATICAL PHYSICS – I

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define scalar Product.

2. What is scalar point function?

3. Define unitary matrix.

4. Matrices A and B are such that $3A - 2B = \begin{bmatrix} 2 & 1 \\ -2 & -1 \end{bmatrix}$, find A and B.

5. Write the associative law of matrix addition.

6. What is the symmetry property of beta function?

7. Show that $J_n(-x) = (-1)^n J_n(x)$.

8. Half order Bessel's function $J_{3/2}(x) =$ ————————.

9. Fourier integral for $f(x)$ is ————————.

10. Write Laplace transform of the derivative of $f(t)$.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL the questions, choosing either (a) or (b).

11. (a) Find m so that the vectors $2\hat{i} - 4\hat{j} + 5\hat{k}$; $\hat{i} - m\hat{j} + \hat{k}$ and $3\hat{i} + 2\hat{j} - 5\hat{k}$ are coplanar.

Or

(b) State and prove Gauss's divergence theorem.

12. (a) Find the curl of the function $f = x\cos zi + y\log xj - z^2k$.

Or

(b) Derive the gradient and divergence of orthogonal curvilinear coordinates.

13. (a) Find the rank of the following matrix by reducing it to normal form $A = \begin{bmatrix} 1 & 2 & -1 & 3 \\ 4 & 1 & 2 & 1 \\ 3 & -1 & 1 & 2 \\ 1 & 2 & 0 & 1 \end{bmatrix}$.

Or

(b) Find the characteristic roots of the matrix $\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$.

14. (a) Derive the generating function of Bessel's differential equation.

Or

(b) Deduce the recurrence relations of Legendre's differential equation.

15. (a) Find Fourier since transform of $\frac{1}{x}$.

Or

(b) Find the Laplace transform of $t \sinh at$.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. State and prove Stoke's theorem.

17. Express the gradient and divergence in terms of cylindrical coordinates.

18. Reduce the following matrix into diagonal matrix $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{bmatrix}$.

19. Solve the Laguerre differential equation and deduce its final solution.

20. Find the Fourier transform of e^{-ax^2}, where $a > 0$.

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D–8520

Sub. Code
34513

DISTANCE EDUCATION

M.Sc. (Physics) DEGREE EXAMINATION, MAY 2025.

First Semester

LINEAR AND INTEGRATED ELECTRONICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define semiconductors.

2. What is reverse bias of a diode?

3. What is DC load line?

4. Define push pull amplifier.

5. What is FET? List any two applications of FET.

6. What are photo detectors?

7. Define operational amplifier.

8. What is CMRR ratio of a OP-AMP?

9. Define analogy computation.

10. What are the type of active filters?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Differentiate intrinsic and extrinsic semiconductors.

Or

(b) Briefly explain forward and reverse bias of diode with necessary diagrams.

12. (a) Briefly write a note on CB configurations of a transistor.

Or

(b) Write a short note on transformer coupled audio power amplifier.

13. (a) Discuss the construction and working of DIAC.

Or

(b) Write a short note on Colpitt's oscillator.

14. (a) Draw the equivalent circuit of IC – 741.

Or

(b) Define the following :

(i) Input capacitance

(ii) Input offset voltage

(iii) Nullification.

15. (a) List out the applications of OP – AMP 741.

Or

(b) Write a short note on band pass filter.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What is zener diode? Explain its construction and characteristics.

17. What are special purpose diodes? Explain any two in brief.

18. Describe the construction, working and I/O characteristics of MOSFET.

19. What is operational amplifier? Discuss the block diagram of OP – AMP.

20. Write a note on inverting and non-inverting amplifiers.

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D–8521	Sub. Code
	34521

DISTANCE EDUCATION

M.Sc. (Physics) DEGREE EXAMINATION, MAY 2025.

Second Semester

QUANTUM MECHANICS — I

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. List some limitations of wave functions.

2. Define the dual nature of radiation.

3. Differentiate bound states and unbound states.

4. Write down the Schrodinger wave equation for a particle in a box.

5. Mention the matrices that represents the operators a and a^+

6. Define space inversion or parity operations.

7. Under what situation, WKB approximation method is applicable?

8. What are the selection rules of absorption in scattering?

9. Whet does Born approximation fails?

10. What are partial waves?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) What is Heisenberg Uncertainty principle? Using it, calculate the ground state energy of Hydrogen atom and prove the non existence of electron in the nucleus.

Or

(b) Write short notes on :

(i) Eigen values and Eigen functions

(ii) Probability density.

12. (a) Derive the energy Eigen values and Eigen functions in the case of a rigid rotator.

Or

(b) Discuss the theory of free particle in one dimension using Schrodinger equation.

13. (a) Develop the first order perturbation theory for non degenerate case.

Or

(b) Analyse the salient features of Schrodinger picture.

14. (a) Using variational principle, derive an expression for ground state of Helium atom.

Or

(b) Describe the semiclassical theory of radiation.

15. (a) Explain Raman Scattering using perturbation theory.

Or

(b) Derive the Rutherford's scattering cross section formula for scattering by a pure coulomb potential.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Obtain the transmission coefficient for the case $E < V_0$ using Schrodinger equation using tunnel effect phenomenon.

17. By taking a particle moving in a spherically symmetric potential find the solutions for R, θ and ϕ equations.

18. Describe the WKB approximation method and obtain its connection formulae.

19. Give the first order time dependent perturbation theory and hence derive Fermi's Golden rule.

20. What are Einstein's coefficients of spontaneous and induced emission of radiation? Deduce a relationship between them.

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D–8522

Sub. Code
34522

DISTANCE EDUCATION

M.Sc. (Physics) DEGREE EXAMINATION, MAY 2025.

Second Semester

MATHEMATICAL PHYSICS – II

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. If Z_1 and Z_2 are two complex numbers, then prove that $|Z_1 Z_2| = |Z_1||Z_2|$.

2. Locate the singularities of $f(z) = \frac{1}{\sin \pi/2}$.

3. What is Cauchy's integral theorem?

4. Write the two dimensional heal equation in steady state condition.

5. Mention the uses of Green's function.

6. What is Ranic of a tensor?

7. Write a note on summation convention.

8. What is the dummy index? Given an example.

9. Define cyclic group.

10. What is classical probability?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Derive Cauchy-Riemann conditions.

Or

(b) If $f(z)$ is analytic function within and on a simple closed curve C then prove that $f(a) = \frac{1}{2\pi i}\int_C \frac{f(z)}{z-a}dz$.

12. (a) Write a note on conformal mapping.

Or

(b) Evaluate the residues of $\frac{z^2}{(z-1)(z-2)(z-3)}$.

13. (a) Derive the one dimensional heat flow equation.

Or

(b) Applying method of separation of variables technique. Find the solution to the partial differential equation $3\frac{\partial u}{\partial x} + 2\frac{\partial u}{\partial y} = 0$.

14. (a) Write a note on contrvariant and covariant tensors.

Or

(b) Write a note on addition of two tensors with example.

15. (a) Write a note on homomorphism and isomorphism.

Or

(b) Discuss about random variable with example.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss about the Laurent theorem.

17. What is Cauchy's residue theorem? Evaluate the following integral using the residue theorem $\int_C \frac{1+z}{z(2-z)} dz$ where C is the circle $|z| = 1$.

18. Find an orthonormal basis for the vector space generated by the vector $(1,1,0,1)$, $(1,-2,0,0)$ and $(1,0,-1,2)$ using Gram-Schmidt orthogonalisation process.

19. State and prove quotient law of tensor.

20. Derive the mean and variance of Binomial distribution.

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D–8523

Sub. Code
34523

DISTANCE EDUCATION

M.Sc. (Physics) DEGREE EXAMINATION, MAY 2025.

Second Semester

ELECTROMAGNETIC THEORY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. Define Poynting theorem.

2. State Faraday's induction law.

3. Give the Fresnel's equations.

4. What are the kinematic properties of e.m.waves?

5. What is called Lorentz force?

6. What is the reason of the appearance of blue color of sky?

7. Write the uses of Gunn diode.

8. Define magnetostatics.

9. Brief resonance cavity.

10. What is Lienard-Wiechart potential?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Prove that the electric field and magnetic field intensity are in same phase when the electromagnetic waves are propagating in an isotropic dielectric medium.

Or

(b) Arrive an equation for the penetration depth for the propagation of e.m.waves in a conducting medium.

12. (a) Deduce the boundary conditions at the surface of discontinuity of two dielectric media.

Or

(b) Describe the reflection and transmission coefficients of electromagnetic waves at the interface of two dielectrics.

13. (a) Describe the theory of scattering of electromagnetic waves.

Or

(b) Explain the coherence and incoherence of scattered light.

14. (a) Explain the Klystron with neat diagram.

Or

(b) Write a note on rectangular wave guides.

15. (a) Explain the Lienard-Wiechart potential.

Or

(b) Arrive the Fresnel's equation when E is perpendicular to the plane of incidence.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the propagation of electromagnetic waves in anisotropic dielectric medium.

17. Describe the total internal reflection.

18. Elaborate the dispersion in solids and liquids. Obtain the Claussius-Mossatti relation.

19. Explain the plasma waves in detail.

20. Describe the charged particles in uniform constant electric and magnetic fields.

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D–8524

Sub. Code
34531

DISTANCE EDUCATION

M.Sc.(Physics) DEGREE EXAMINATION, MAY 2025.

Third Semester

MOLECULAR SPECTROSCOPY

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define Hybridization.

2. Explain briefly about Heitler London theory.

3. What are symmetric top molecules?

4. Mention any two importance of microwave spectroscopy.

5. Write a note on dissociation energy.

6. Name the various types of bending and stretching vibrations.

7. What is inverse Raman effect?

8. Define stimulated Raman scattering.

9. What is spin lattice interaction?

10. Write the principle of electron spin resonance.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write a note on *SP*, SP^2 and SP^3 hybridization.

Or

(b) Explain the energy changes involved in a covalent bond formation on the basis of valence bond theory.

12. (a) What is a rigid rotator? How does it account for rotational spectroscopy?

Or

(b) Discuss the normal coordinates and normal modes of vibration in a crystal.

13. (a) Define stark effect and state its importance in microwave spectroscopy.

Or

(b) Write a detail note on intensity distribution of co molecule.

14. (a) What is multiphoton absorption? Explain with the example of two photon absorption process.

Or

(b) Give some of the characteristic properties of the stimulated emissions.

15. (a) Write a detailed note on interaction between spin and magnetic field.

Or

(b) State the principle of NQR and describe in detail its applications.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Explain the formation of hydrogen molecule based on Heitler - London theory along with the explanation of the potential energy curve.

17. Write a detailed account on how intensities of transition between vibrational states are calculated using Franck London's principle.

18. What is portait parabola? Explain.

19. Describe the rotational and vibrational spectra of diatomic molecule.

20. Give an expression for the determination of crystal symmetry and molecular structure in Mossbauer spectroscopy.

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D–8525

Sub. Code
34532

DISTANCE EDUCATION

M.Sc.(Physics) DEGREE EXAMINATION, MAY 2025.

Third Semester

QUANTUM MECHANICS II

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Write down the eigen value equations for J_2 and J_2 operators.

2. Obtain the matrix representation for J_x and J_y for $j = 1$.

3. What do you mean by central field approximation?

4. Write down the dimensionless Thomas Fermi equation.

5. Define identical particles and particle exchange operator.

6. What are the short comings of Klein Gordon relativistic wave equation?

7. Differentiate relativistic and non relativistic fields.

8. Why do we quantize any field?

9. Give any two applications of scattering theory.

10. Define scattering cross sections and scattering length.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Discuss about spin angular momentum and obtain the eigen vectors for spin = ½ system.

Or

(b) List and prove few commutation relations of angular momentum operators.

12. (a) Explain Hartree's self consistent field theory.

Or

(b) Discuss about the classification of elements in periodic table using central field approximation theory.

13. (a) Derive Klein Gordon relativistic wave equation.

Or

(b) Analyse the significance of negative energy states.

14. (a) Explain the quantisation of Dirac field.

Or

(b) Discuss how the quantisation of Schrodinger equation represent a system of bosons.

15. (a) Describe the salient features of optical theorem.

Or

(b) Explain Born approximation, obtain the condition for the validity of Born approximation.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss about the doublet separation and doublet intensity in the spectra of alkali atoms.

17. Solve the Dirac equation for free particle. Obtain Dirac matrices.

18. Show that

    (a) $[L_x, xp_x] = 0$

    (b) $(\vec{\sigma}.\vec{A})(\vec{\sigma}.\vec{B}) = \vec{A}.\vec{B} + i\vec{\sigma}(\vec{A} \times \vec{B})$

    where $\vec{\sigma}$ are the Pauli's spin matrices and $\vec{A} \times \vec{B}$ are vectors.

19. Describe in detail about the quantisation of electromagnetic field.

20. Explain the theory of partial wave analysis in scattering method.

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D–8526	Sub. Code
	34533

DISTANCE EDUCATION

M.Sc.(Physics) DEGREE EXAMINATION, MAY 2025.

Third Semester

MICROPROCESSOR AND ELECTRONIC INSTRUMENTATION

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL questions.

1. What is the data format of microprocessor?

2. Write any four Op-code for arithmetic instruction.

3. Define subroutine in 8085.

4. Explain special function registers.

5. What is address space partition in micro processor?

6. Explain the different modes of DMA controller.

7. Why SAR is said to be the best method?

8. What is temperature transducer?

9. Differentiate photovoltaic and photoconductive cell.

10. List different types of displacement transducers.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Brief note on status flags in microprocessor 8085.

Or

(b) Discuss the register organization in 8086.

12. (a) What is Pseudo instructions?? Differentiate instruction and Pseudo instruction.

Or

(b) Discuss the interrupts in 8051.

13. (a) Write a note on memory and I/O interfacing.

Or

(b) Elaborate the programmable communication interface with a proper pin diagram.

14. (a) Illustrate the working principle of sample and hold circuit.

Or

(b) Explain the working of thermoelectric transducer.

15. (a) How displacement is measured using capacitive displacement transducer?

Or

(b) Differentiate Weighted resistor and Resistor ladder network method.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Illustrate the architecture of 8085 microprocessor with a proper diagram.

17. Write a program for traffic control system and explain it with a circuit diagram.

18. Explain how microprocessor is used to construct stepper motor control circuit.

19. Write a detailed note on the following

    (a) Thermo-resistive transducers

    (b) LVDT transducer.

20. Briefly explain the working principle of interrupt controller 8259.

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D–8527

Sub. Code
34541

DISTANCE EDUCATION

M.Sc.(Physics) DEGREE EXAMINATION, MAY 2025.

Fourth Semester

CONDENSED MATTER PHYSICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define Lattice and Basis.

2. Derive width band of hexagonal closed pack structure.

3. Explain crystallographic axes of a crystal.

4. Give two examples of piezoelectric and pyroelectric crystals.

5. Define polarization.

6. Define paramagnetism with an example.

7. Define ferroelectric domain.

8. Define anti-ferromagnetic material and give example.

9. Define cooper pairs.

10. What are the applications of superconductors?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) What is meant by structure factor? Derive the necessary expression for it.

Or

(b) Explain the FCC and HCP in detail with some suitable examples.

12. (a) Briefly explain about the free electron gas in three dimensions.

Or

(b) Write a short note on ferroelectric properties of crystals.

13. (a) Discuss the band theory of solids.

Or

(b) Explain the following terms :

(i) Spin waves

(ii) Hard and soft magnetic materials.

14. (a) Derive Weel's theory.

Or

(b) List out the classification of magnetic materials.

15. (a) Define superconductor and write a short note on type II superconductor with example.

Or

(b) Derive D.C. Josephson effect.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss Wigner - Seitz cell and draw wigner - seitz cell for two dimensional oblique lattices.

17. Derive an expression on kronnig penny model.

18. Discuss diamagnetic, paramagnetic and ferromagnetic materials and distinguish between them.

19. Discuss the Weiss molecular field theory of ferromagnetism.

20. Derive an equation for penetration depth of magnetic lines in superconductor.

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D–8528

Sub. Code
34542

DISTANCE EDUCATION

M.Sc.(Physics) DEGREE EXAMINATION, MAY 2025.

Fourth Semester

NUCLEAR AND PARTICLE PHYSICS

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Define nuclear isomerism.

2. What is neutrino?

3. State spin - orbit coupling.

4. Define magnetic moment.

5. State nuclear fission.

6. How do you normalize the deutron wave function?

7. What is meant by thermal neutrons?

8. Define spherical nuclear reactor.

9. What is iso spin?

10. Write a note on leptons.

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Give an account on parity violation in β-decay.

Or

(b) How is internal conversion co-efficient of gamma rays obtained? Explain with necessary theory.

12. (a) Describe the features of collective nuclear model.

Or

(b) Explain how spin-orbit coupling can be accounted on the basis of shell model.

13. (a) How the mass of $\pi-$meson is determined from meson's theory of nuclear forces?

Or

(b) What is partial wave analysis? Explain.

14. (a) Discuss the theory on the interaction of neutron with matter.

Or

(b) Write a detail note on sources of stellar energy and sub-nuclear particles.

15. (a) Write a note on :

(i) Leptons

(ii) Quarks.

Or

(b) What are the fundamental forces in nature? Explain.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Describe the Ganow's theory of α – decay.

17. Give an account on the shell model of the nucleus.

18. Discuss Yukawa's meson theory of nuclear forces.

19. Derive an expression for the critical size of a nuclear reactor.

20. Derive the relation of relativistic kinetics of elementary particles.

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D–8529

Sub. Code
34543

DISTANCE EDUCATION

M.Sc.(Physics) DEGREE EXAMINATION, MAY 2025.

Fourth Semester

MATERIALS SCIENCE

(CBCS 2018 – 2019 Academic Year Onwards)

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. Differentiate elastic and inelastic behaviours of material.

2. Describe polymer.

3. What is meant by oxidation of metals?

4. What is the process of epitaxy?

5. Define Gas lasers.

6. What is Pockel and Kerr effect?

7. Describe the composition of cement.

8. List the advantages of carbon matrix composites.

9. Explain Pseudo elasticity.

10. What is glassy material?

PART B — ($5 \times 5 = 25$ marks)

Answer ALL questions, choosing either (a) or (b).

11. (a) Explain the process of addition polymerization.

Or

(b) Discuss the working principle of Vacuum pumps.

12. (a) Write a note on vapour phase epitaxy.

Or

(b) With a proper diagram explain the working principles of LASER.

13. (a) Discuss the working principle of Nd-YAG laser.

Or

(b) What is the working principle of Electro-Optic modulators?

14. (a) List the applications of metal-matrix composites.

Or

(b) Discuss the structural properties of amorphous and glassy materials.

15. (a) Describe the working mechanism of memory alloys.

Or

(b) Write a short note on micro electro mechanical systems (MEMS).

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

16. Discuss the elastic and viscoelastic behaviours of materials.

17. What is meant by corrosion resistance materials? Explain the methods of prevent the corrosion on the materials.

18. Explain the process of the Q-switching and mode locking.

19. Discuss the thermal and electrochemical applications of polymer composite materials.

20. Discuss the applications of the following (a) Nitinol (b) Micro-accelerometers.

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