

  
**DRAVIDIAN UNIVERSITY**  
*Directorate of Distance Education (DDE)*  
**KUPPAM – 517 426:: A.P.**  
**Two year PG Examinations DDE**  
**Course: I year Physics**  
**Paper – I Classical and Statistical mechanics**  
**Question Paper for Assignment**

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Answer any **THREE** of the following FIVE Questions.

3x10=30

1. What is principle of virtual work? Explain D'Alembert's?
2. Write Hamilton – Jacobi equations, describe harmonic oscillator problem?
3. Explain Euler's Equations of motion?
4. What are phase spaces? Explain concept of ensembles?
5. Explain a) Dulong and petit's law  
b) Einstein and Debye's theories of heat capacities

Set - I

  
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**Paper – II Electro magnetic theory, optics and spectroscopy**  
**Question Paper for Assignment**

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Answer any **THREE** of the following **FIVE** Questions.

3x10=30

1. Write Maxwell's equations. Explain propagation of light in isotropic dielectric medium?
2. Explain convolution integral and apodization?
3. a) Explain the working of He-Ne laser with diagram?  
b) Explain recording and reconstruction of hologram?
4. Explain LS and JJ coupling schemes?
5. Explain anomalous Zeeman Effect?

  
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**Paper – III Elementary solid state physics**  
**Question Paper for Assignment**

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Answer any **THREE** of the following **FIVE** Questions.

3x10=30

1. a) Explain Basis, Crystal Structure and primitive lattice cell?  
b) Discuss the Crystal Structure of Diamond?
2. Explain the Sommerfeld model of its Consequences in terms of electron lattice interaction?
3. Explain Kronig – Penney model for electron moving in periodic potential fields?
4. a) Define intrinsic and extrinsic semiconductors?  
b) Explain drift and diffusion charge carriers?
5. a) What is Meissner effect? Explain diamagnetic property of Super conductor?  
b) Write application of Super conductor?

  
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**Paper – IV Electronic Devices and Circuits**  
**Question Paper for Assignment**

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Answer any **THREE** of the following **FIVE** Questions.

3x10=30

1. a) Explain the working of FET with necessary diagram  
b) Discuss the operation of FET amplifier circuit
2. a) Draw the block diagram of an op – Amp and Explain the working of each part  
b) Discuss op- amp inverting and non – inverting amplifiers
3. Explain OP – AMP Wein bridge oscillator?
4. Explain Frequency Division Multiplexing (FDM)?
5. With the help of a block diagram? Explain the internal architecture of 8085 micro processor?

  
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**Course: I year Physics**  
**Paper – V Mathematical methods of physics**  
**Question Paper for Assignment**

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Answer any **THREE** of the following **FIVE** Questions.

3x10=30

1. Explain the Legendre equation for harmonic oscillator?
2. Define Fourier Series? Explain following applications of Fourier series?
  - a) Square wave
  - b) Full wave rectifier
3. Write the Cauchy – Riemann equations? Show that  $f(z) = z^2$  is analytic?
4. Derive Simpson's rule?
5. a) Explain identifiers and key words with examples?  
b) Explain Declaration of variables and storage classes?