



B. Sc.(Physics) Semester II

Paper II (Gravitation, Astrophysics, Magnetism and Magneto statics)

Unit I

Gravitation- Kepler's laws of Planetary motion (statement only)

<https://youtu.be/c6hZjFfBbBA>

Newton's law of gravitation, Relation between G and g, Gravitational field, Gravitational potential, Gauss's theorem

<https://youtu.be/DSw5X5aF9P8>

Gravitational potential and intensity due to uniform solid sphere at a point inside and outside the sphere

https://www.youtube.com/watch?v=_zlcv_dx4DI

Gravitational self energy of a galaxy

<https://www.youtube.com/watch?v=LbTtdFqwDZM>

Unit II

Astrophysics- The constituents of universe (Solar system, Stars, Galaxies)

<https://youtu.be/PRE0vuXAL2Q>

Introductory study of solar systems, To measure size of a planet ($d=D.\alpha$)

<https://www.youtube.com/watch?v=-5tz3JbjAL4>

To measure distance of a planet by parallax method ($D=b/\theta$), Mass of the sun and the planets ($M=4\pi r^3/GT^2$), Structure of sun, Solar interior

<https://www.youtube.com/watch?v=-5tz3JbjAL4>

surface temperature of sun ($T=[R/r]^{1/2} . [S/\sigma]^{1/4}$), Solar luminosity, Stellar spectra, The Milky way (shape, size, clusters), Cosmological theories of the universe (Concept only)

https://www.youtube.com/watch?v=3eqqRsk8_Os

Unit III

Magnetism- Introduction, Magnetic materials

<https://www.youtube.com/watch?v=Q6N5-oxEP1Q&list=PLAPKGqvQGg6pRvItoDzjnyZo4LVOrw44j&index=6>

Langevin's theory of diamagnetism, its application as superconductor

<https://www.youtube.com/watch?v=QFTSra92xjY&list=PLAPKGqvQGg6pRvItoDzjnyZo4LVOrw44j&index=1>

Critical magnetic field and Meissner effect, Langevin's theory of para magnetism

[DzjnyZo4LVOrw44j&index=2](https://www.youtube.com/watch?v=x59yzTmc5I0&list=PLAPKGqvQGg6pRvItoDzjnyZo4LVOrw44j&index=2)

[https://www.youtube.com/watch?v=x59yzTmc5I0&list=PLAPKGqvQGg6pRvIto](https://www.youtube.com/watch?v=x59yzTmc5I0&list=PLAPKGqvQGg6pRvItoDzjnyZo4LVOrw44j&index=2)



DHARAMPETH M. P. DEO MEMORIAL SCIENCE COLLEGE, NAGPUR

Ferromagnetism, Ferromagnetic domain, Curie temperature

<https://www.youtube.com/watch?v=SK1TN5pjHfg&list=PLAPKGqvQGg6pRvItoDzjnyZo4LVOrw44j&index=4>

Ferrimagnetisms, Ferrites and its applications, Antiferromagnetism, Neel temperature

<https://www.youtube.com/watch?v=uR4TFesROAM&list=PLAPKGqvQGg6pRvItoDzjnyZo4LVOrw44j&index=5>

Unit IV

Magneto statics- Concept of magnetic field

https://www.youtube.com/watch?v=K-qu_KerOAK&list=PLGqhS9VHP_pNps6pjPbirY67cjf4iBq_x&index=1

Lorentz force equation, Magnetic dipole moment, angular momentum and gyro magnetic ratio

https://www.youtube.com/watch?v=pM8ncrsfj5E&list=PLGqhS9VHP_pNps6pjPbirY67cjf4iBq_x&index=2

Biot- Saverts law, It's applications

<https://youtu.be/JsOOW2wnFR8>

B due to steady current in a long straight wire, B along the axis of circular coil)

<https://www.youtube.com/watch?v=BIIgi-T6sXY&list=PLVPGroJxTV-40JCrqiryMkLb79gIQqjnR&index=1>

Ampere's law, It's applications(B for a solenoid, A Toroid)

<https://www.youtube.com/watch?v=3acfEZZxYac&list=PLVPGroJxTV-40JCrqiryMkLb79gIQqjnR&index=2>

Magnetization current, Magnetic vectors, Gauss law of magnetization

<https://www.youtube.com/watch?v=QkUGxkt8p78&list=PLVPGroJxTV-40JCrqiryMkLb79gIQqjnR&index=3>