# LECTURE NOTES

SUBJECT: ENGG. PHYSICS

BRANCH: COMMON

SEMESTER: 2$^{ND}$ (2022-23)

NAME OF THE FACULTY: ASEEMA BARIK



# GOVERNMENT POLYTECHNIC, BHADRAK

15/05/23

**HOD, Math& Sc**        **Academic Coordinator**                **Principal**
                                                         **Govt. Polytechnic, Bhadrak**

## GOVT. POLYTECHNIC, BHADRAK
### AT: TENTULIGADIA, VIA: RAHANDIA, DIST: BHADRAK, PIN: 756135
E-mail: principalgpbhadrak@gmail.com  Tel: 9438806922

### LESSON PLAN FOR SUMMER SEMESTER – 2023
### Dept. of Math & Science, Govt.Polytechnic, Bhadrak

Name of the Faculty : ASEEMA BARIK
Course Code: TH-2A
Theory: ENGG. PHY.
Total Periods : 60
Examination: SUMMER(2023)
Sem: 2ND

Class Test: 20
End Sem. Exam: 80
Total Mark :100
Class Start : 20.03.2023

| Discipline: | Semester: 2ND (2023) | Name of the Teaching Faculty : Aseema Barik |
|---|---|---|
| Subject: Engineering Physics | No. of Days/per week class allotted: 04 | Semester from date: 20.03.2023  To Date: 27.06.2023 <br><br> No. of Weeks: 15 |
| **Week** | **Class Day** | **Theory/ Topics** |
| 1st | 1st | <ul><li>Brief discussion on geometry and mathematics</li><li>Definition of physical quantities,fundamental units,derived units</li><li>System of units</li></ul> |
| | 2nd | <ul><li>Definition of dimension and dimensional formula of physical quantities</li></ul> |
| | 3rd | <ul><li>Dimensional equation and principle of homogeneity</li><li>Checking the dimensional correctness of physical relations</li></ul> |
| | 4th | <ul><li>Definition and concept of scalar and vector quantities</li><li>Representation of vectors and types of vectors</li></ul> |
| 2nd | 1st | <ul><li>Triangle and parallelogram law of vector addition (graphical method)</li><li>Resolution of vectors</li></ul> |
| | 2nd | <ul><li>Algebraic addition of vectors</li><li>Vector multiplication</li></ul> |
| | 3rd | <ul><li>Concept of rest and motion</li><li>Displacement, speed, velocity, acceleration</li></ul> |
| | 4th | <ul><li>Force, upward motion under gravity</li></ul> |
| 3rd | 1st | <ul><li>Downward motion under gravity</li><li>Circular motion : angular velocity</li></ul> |
| | 2nd | <ul><li>Angular velocity and angular acceleration</li><li>Relation between v, ω and a, α</li></ul> |
| | 3rd | <ul><li>Numerical on kinematics</li><li>Definition and example of projectile</li></ul> |
| | 4th | <ul><li>Derivation of expression for equation of trajectory, T, H and R</li><li>Condition of maximum R</li></ul> |

| | | |
|---|---|---|
| 4th | 1st | • Definition of work, its formula and unit<br>• Definition and concept of friction |
| | 2nd | • Static , dynamic and limiting friction |
| | 3rd | • Revision of limiting friction and laws of limiting friction |
| | 4th | • Coefficient of friction and numerical |
| 5th | 1st | • Method to reduce friction<br>• Newton's law of gravitation |
| | 2nd | • Universal gravitational constant and acceleration due to gravity: Definition , concept, unit and dimension |
| | 3rd | • Relation between g and G<br>• Mass and weight |
| | 4th | • Variation of g with altitude and depth<br>• Kepler's law of planetary motion |
| 6th | 1st | • Simple harmonic motion – definition and example<br>• s, v and a in SHM |
| | 2nd | • Revision of SHM and wave motion |
| | 3rd | • Different wave parameters (A ,$\lambda$, f, T)<br>• Transverse and longitudinal wave motion |
| | 4th | • Relation between v, f, $\lambda$<br>• Definition, properties and application of ultrasonic |
| 7th | 1st | • Question and answer discussion on SHM and wave |
| | 2nd | • Heat and temperature – concept and differences<br>• Units of heat |
| | 3rd | • Specific heat: concept and numerical |
| | 4th | • Change of state and latent heat, numerical |
| 8th | 1st | • Thermal expansion and expansion of solid, Definition of $\alpha$, $\beta$, $\gamma$ |
| | 2nd | • Relation between $\alpha$, $\beta$, $\gamma$ |
| | 3rd | • Work and heat, Joule's mechanical equivalent of heat<br>• First law of thermodynamics<br>• Brief discussion of other laws |
| | 4th | • Reflection, Refraction<br>• Laws of reflection and refraction |
| 9th | 1st | • Class test |
| | 2nd | • Refractive index and numerical |
| | 3rd | • Critical angle and total internal reflection, fiber optic |
| | 4th | • Refraction through prism |
| 10th | 1st | • Class test |
| | 2nd | • Electrostatic and Coulomb's law<br>• Absolute and relative permittivity, electric potential and potential difference |
| | 3rd | • Electric field<br>• Capacitance<br>• Series and parallel combination of capacitors |
| | 4th | • Properties of magnet |

| | | |
|---|---|---|
| 11th | 1st | • Coulomb's law in magnetism<br>• Magnetic flux density, magnetic field intensity |
| | 2nd | • Revision on B, H, φ and magnetic lines of force<br>• Electric current and Ohm's law |
| | 3rd | • Combination of resistors, Kirchoff's law |
| | 4th | • Application of Kirchoff's law to Wheatstone bridge<br>• Condition of balance |
| 12th | 1st | • Electromagnetism, Biot-Savart Law<br>• Force on a charge placed in a magnetic field |
| | 2nd | • Force acting on a current carrying conductor placed in magnetic field |
| | 3rd | • Fleming's Left Hand rule, Electromagnetic induction<br>• Faraday's law of electromagnetic induction |
| | 4th | • Lenz's law<br>• Fleming's Right Hand Rule<br>• Comparison between FLR and FRR |
| 13th | 1st | • LASER and its properties |
| | 2nd | • Principle of LASER |
| | 3rd | • Application of LASER |
| | 4th | • Wireless transmission – ground waves, sky waves, space waves |
| 14th | 1st | • Important questions and discussion |
| | 2nd | • Important questions and discussion |
| | 3rd | • Important questions and discussion |
| | 4th | • Important questions and discussion |
| 15th | 1st | • Important questions and discussion |
| | 2nd | • Important questions and discussion |
| | 3rd | • Important questions and discussion |
| | 4th | • Important questions and discussion |