

**P.N. DAS COLLEGE**

**ACADEMIC CALENDAR**

**DEPARTMENT OF PHYSICS**

**CBCS + NEP SYSTEM**

**2023-24**

# SEMESTER-I-(GENERAL)(PHSG)

UNDER NEP 2020

SESSION-AUG,2023-FEB,2024

| PAPER | UNIT | TOPIC                                                                                                               | NO OF LECTURES | NAME OF THE TEACHER                   |
|-------|------|---------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------------|
|       | I    | VECTORS                                                                                                             | 10             | Dr. SHARMILA DE<br><br>PRODESH SARKAR |
|       | II   | PARTICLE DYNAMICS                                                                                                   | 14             |                                       |
|       | III  | GRAVITATION                                                                                                         | 07             |                                       |
|       | IV   | OSCILLATIONS                                                                                                        | 06             |                                       |
|       | V    | ELASTICITY                                                                                                          | 08             |                                       |
|       | 1.   | TO DETERMINE MOMENT OF INERTIA OF A REGULAR BODY USING ANOTHER AUXILARY BODY AND A CRADLE SUSPENDED BY A METAL WIRE | 04             | Dr. SHARMILA DE                       |
|       | 2.   | TO DETERMINE g AND VELOCITY OF FOR A FREELY BODY USING DIGITAL TIMING TECHNIQUE                                     | 05             |                                       |

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|  | 3. | TO DETERMINE YOUNG'S<br>MODULUS BY FLEXURE<br>METHOD                                  | 04 | PRODESH<br>SARKAR |
|  | 4. | TO DETERMINE THE<br>MODULUS OF RIGIDITY OF A<br>WIRE BY A TORSIONAL<br>PENDULUM       | 05 |                   |
|  | 5. | TO DETERMINE THE VALUE<br>OF g USING BAR PENDULUM                                     | 04 |                   |
|  | 6. | TO DETERMINE THE VALUE<br>OF g USING KATER'S<br>PENDULUM                              | 04 |                   |
|  | 7. | To determine the<br>coefficient of Viscosity<br>of water by capillary<br>flow method. | 04 |                   |

## SEMESTER-II-(GENERAL)(PHSG)

UNDER NEP 2020

SESSION-MAR-AUG,2024

| PAPER | UNIT | TOPIC                                                              | NO OF LECTURES | NAME OF THE TEACHER                   |
|-------|------|--------------------------------------------------------------------|----------------|---------------------------------------|
|       | I    | VECTOR ANALYSIS                                                    | 12             | Dr. SHARMILA DE<br><br>PRODESH SARKAR |
|       | II   | ELECTROSTATICS                                                     | 18             |                                       |
|       | III  | MAGNETISM                                                          | 10             |                                       |
|       | IV   | ELECTROMAGNETIC INDUCTION                                          | 06             |                                       |
|       | V    | LINEAR NETWORK                                                     | 05             |                                       |
|       | VI   | MAXWELL'S EQUATION AND ELECTROMAGNETIC WAVE PROPAGATION            | 09             |                                       |
|       | 1.   | TO DETERMINE AN UNKNOWN LOW REGISTANCE USING CAREY FOSTER'S BRIDGE | 03             | Dr. SHARMILADE                        |
|       | 2.   | TO VERIFY THEVENIN AND NORTON THEORMS                              | 03             |                                       |

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|  | 3.  | TO VERIFY<br>SUPERPOSITION AND<br>MAXIMUM POWER<br>TRANSFER THEORM                                                                                                                | 03 | PRODESH<br>SARKAR |
|  | 4.  | TO DETERMINE SELF<br>INDUCTANCE OF A COIL<br>BY ANDERSON'S BRIDGE                                                                                                                 | 03 |                   |
|  | 5.  | TO STUDY RESPONSE<br>CURVE OF A SERIES LCR<br>CIRCUIT AND DETERMINE<br>ITS (a) RESONANT<br>FREQUENCY (b)<br>IMPEDANCE AT<br>RESONANCE (c) QUALITY<br>FACTOR AND (d) BAND<br>WIDTH | 03 |                   |
|  | 6.  | TO STUDY THE RESPONSE<br>CURVE OF A PARALLEL LCR<br>CIRCUIT AND DETERMINE<br>ITS (a) ANTI-RESONANT<br>FREQUENCY AND (b)<br>QUALITY FACTOR                                         | 03 |                   |
|  | 7.  | TO STUDY THE<br>CHARACTERISTICS OF A<br>SERIES RC CIRCUIT                                                                                                                         | 03 |                   |
|  | 8.  | TO DETERMINE<br>UNKNOWN LOW<br>REGISTANCE USING<br>POTENTIOMETER                                                                                                                  | 03 |                   |
|  | 9.  | TO DETERMINE THE<br>REGISTANCE OF A<br>GALVANOMETER USING<br>THOMSON'S METHOD                                                                                                     | 03 |                   |
|  | 10. | MEASUREMENT OF FIELD<br>STRENGTH B AND ITS<br>VARIATION IN A<br>SOLENOID                                                                                                          | 03 |                   |

**SEMESTER-III-(GENERAL)(PHSG)**

**UNDER CBCS**

**SESSION-SEP,2023-FEB,2024**

| PAPER                     | UNIT | TOPIC                                                                                                         | NO OF LECTURES | NAME OF THE TEACHER |
|---------------------------|------|---------------------------------------------------------------------------------------------------------------|----------------|---------------------|
| PHSGCOR03T<br>(Theory)    | I    | LAWS OF THERMODYNAMICS                                                                                        | 22             | PRODESH SARKAR      |
|                           | II   | THERMODYNAMIC POTENTIALS                                                                                      | 10             |                     |
|                           | III  | KINETIC THEORY OF GASES                                                                                       | 10             |                     |
|                           | IV   | THEORY OF RADIATION                                                                                           | 06             |                     |
|                           | V    | STATISTICAL MECHANICS                                                                                         | 12             |                     |
| PHSGCOR03P<br>(Practical) | 1.   | VERIFICATION OF STEFAN'S LAW USING A TORCH BULB                                                               | 03             | PRODESH SARKAR      |
|                           | 2.   | TO DETERMINE THE COEFFICIENT OF THERMAL CONDUCTIVITY OF A BAD CONDUCTOR BY LEE AND CHARLTON'S DISC METHOD     | 03             |                     |
|                           | 3.   | TO THE TEMPERATURE COEFFICIENT OF REGISTANCE BY PLATINUM REGISTANCE THERMOMETER USING CONSTANT CURRENT SOURCE | 03             |                     |
|                           | 4.   | TO STUDY THE VARIATION OF THERMO-EMF OF A THERMOCOUPLE WITH A DIFFERENCE OF TEMPERATURE OF ITS TWO JUNCTIONS  | 03             |                     |
|                           | 5.   | TO CALIBRATE A THERMOCOUPLE TO MEASURE TEMPERATURE IN A SPECIFIC RANGE BY NULL                                | 03             |                     |

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|  |            | <b>METHOD USING A<br/>POTENTIOMETER</b>                                                                                                                                                                       |           |  |
|  | <b>6.</b>  | <b>TO CALIBRATE A<br/>THERMOCOUPLE TO<br/>MEASURE TEMPERATURE IN<br/>A SPECIFIED RANGE BY<br/>DIRECT MEASUREMENT<br/>USING OP-AMP<br/>DIFFERENTIAL AMPLIFIER<br/>AND TO DETERMINE<br/>NEUTRAL TEMPERATURE</b> | <b>03</b> |  |
|  | <b>7.</b>  | <b>MEASUREMENT OF<br/>UNKNOWN TEMPERATURE<br/>USING DIODE SENSOR</b>                                                                                                                                          | <b>03</b> |  |
|  | <b>8.</b>  | <b>TO DETERMINE<br/>MECHANICAL EQUIVALENT<br/>OF HEAT, J , BY CALLENDER<br/>AND BARNE'S CONSTANT<br/>FLOW METHOD</b>                                                                                          | <b>03</b> |  |
|  | <b>9.</b>  | <b>TO DETERMINE COEFFICIENT<br/>OF THERMAL CONDUCTIVITY<br/>OF CU BY SEAELE'S<br/>APPARATUS</b>                                                                                                               | <b>03</b> |  |
|  | <b>10.</b> | <b>TO DETERMINE THE<br/>COEFFICIENT OF THERMAL<br/>CONDUCTIVITY OF CU BY<br/>ANGSTROM'S METHOD</b>                                                                                                            | <b>03</b> |  |

**SEMESTER-IV-(GENERAL)(PHSG)**

**UNDER CBCS**

**SESSION- MAR-JUL,2024**

| PAPER | UNIT | TOPIC | NO OF<br>LECTURES | NAME OF THE<br>TEACHER |
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| PHSGCOR04T<br>(Theory)    | I    | SUPERPOSITION N OF<br>TWO COLLINEAR<br>HARMONIC OSCILLATIONS                         | 04 | PRODESH<br>SARKAR |
|                           | II   | SUPERPOSITION OF<br>TWO PERPENDICULAR<br>HARMONIC OSCILLATIONS                       | 02 |                   |
|                           | III  | WAVES MOTION GENERAL                                                                 | 07 |                   |
|                           | IV   | FLUIDS                                                                               | 06 |                   |
|                           | V    | SOUND                                                                                | 06 |                   |
|                           | VI   | WAVE OPTICS                                                                          | 03 |                   |
|                           | VII  | INTERFERENCE                                                                         | 10 |                   |
|                           | VIII | MICHELSON'S<br>INTERFEROMETER                                                        | 03 |                   |
|                           | IX   | DIFFRACTION                                                                          | 14 |                   |
|                           | X    | POLARIZATION                                                                         | 05 |                   |
| PHSGCOR04P<br>(Practical) | 1.   | TO DETERMINE THE<br>FREQUENCY OF AN<br>ELECTRIC TUNING FORK<br>BY MEDLE'S EXPERIMENT | 03 |                   |
|                           | 2.   | TO DETERMINE<br>COEFFICIENT OF<br>VISCOSITY OF WATER BY<br>CAPILLARY FLOW<br>METHOD  | 03 |                   |
|                           | 3.   | TO DETERMINE<br>REFRACTIVE INDEX OF<br>THE MATERIAL OF A<br>PRISM USING SODIUM       | 03 |                   |
|                           | 4.   | SOURCE                                                                               | 03 |                   |

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|  | 5.  | TO DETERMINE THE<br>DISPERSIVE POWER AND<br>CAUCHY CONSTANTS OF<br>THE MATERIAL OF A<br>PRISM USING MERCURY<br>SOURCE                            | 03 | PRODESH<br>SARKAR |
|  | 6.  | TO DETERMINE<br>WAVELENGTH OF SODIUM<br>LIGHT USING FRESNEL<br>BIPRISM                                                                           | 03 |                   |
|  | 7.  | TO DETERMINE<br>WAVELENGTH OF SODIUM<br>LIGHT USING NEWTON'S<br>RING                                                                             | 02 |                   |
|  | 8.  | TO DETERMINE<br>DISPERSIVE POWER AND<br>RESOLVING POWER OF A<br>PLANE DIFFRACTION<br>GRATING                                                     | 02 |                   |
|  | 9.  | TO DETERMINE THE<br>THICKNESS OF A THIN<br>PAPER BY MEASUREING<br>THE WIDTH OF THE<br>INTERFERENCE FRINGES<br>PRODUCED BY A<br>WEDGE-SHAPED FILM | 02 |                   |
|  | 10. | FAMILIARIZATION WITH:<br>SCHUSTER'S FOCUSING:<br>DETERMINATION OF<br>ANGLE OF PRISM                                                              | 02 |                   |
|  | 11. | TO DETERMINE<br>WAVELENGTH OF (1) Na<br>SOURCE AND (2)<br>SPECTRAL LINES OF Hg<br>SOURCE USING PLANE<br>DIFFRACTION GRATING                      | 02 |                   |

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|  | 12. | <p>TO INVESTIGATE THE MOTION OF COUPLED OSCILLATORS</p> <p>TO DETERMINE THE WAVELENGTH OF SODIUM SOURCE USING MICHELSON'S INTERFEROMETER</p> | 02 |  |
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**SEMESTER-V-(GENERAL)(PHSG)**

**UNDER CBCS**

**SESSION-SEP,2023-FEB,2024**

| <b>PAPER</b> | <b>UNIT</b> | <b>TOPIC</b> | <b>NO OF LECTURES</b> | <b>NAME OF THE TEACHER</b> |
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| <b>PHSGDSE01T<br/>(Theory)</b>    | <b>I</b>   | <b>DIGITAL CIRCUITS</b>                                                                             | <b>15</b> | <b>PRODESH<br/>SARKAR</b> |
|                                   | <b>II</b>  | <b>SEMICONDUCTOR<br/>DEVICES AND AMPLIFIERS</b>                                                     | <b>15</b> |                           |
|                                   | <b>III</b> | <b>OPERATIONAL<br/>AMPLIFIERS</b>                                                                   | <b>14</b> |                           |
|                                   | <b>IV</b>  | <b>INSTRUMENTATIONS</b>                                                                             | <b>16</b> |                           |
| <b>PHSGDSE01P<br/>(Practical)</b> | <b>1.</b>  | <b>TO MEASURE (a) VOLTAGE<br/>AND (b) FREQUENCY OF A<br/>PERIODIC WAVEFORM<br/>USING CRO</b>        | <b>03</b> | <b>PRODESH<br/>SARKAR</b> |
|                                   | <b>2.</b>  | <b>TO VERIFY AND DESIGN<br/>AND, OR, NOT AND XOR<br/>GATES USING NAND<br/>GATES</b>                 | <b>03</b> |                           |
|                                   | <b>3.</b>  | <b>TO MINIMIZE A GIVEN<br/>LOGIC CIRCUIT</b>                                                        | <b>03</b> |                           |
|                                   | <b>4.</b>  | <b>HALF ADDER, FULL ADDER<br/>AND 4-BIT BINARY ADDER</b>                                            | <b>03</b> |                           |
|                                   | <b>5.</b>  | <b>ADDER-SUBTRACTOR<br/>USING FULL ADDER I.C.</b>                                                   | <b>03</b> |                           |
|                                   | <b>6.</b>  | <b>TO DESIGN AN ASTABLE<br/>MULTIVIBRATOR OF<br/>GIVEN SPECIFICATIONS<br/>USING 555 TIMER</b>       | <b>03</b> |                           |
|                                   | <b>7.</b>  | <b>TO DESIGN A<br/>MONOSTABLE<br/>MULTIVIBRATOR OF<br/>GIVEN SPECIFICATIONS<br/>USING 555 TIMER</b> | <b>03</b> |                           |
|                                   | <b>8.</b>  | <b>TO VERIFY IV<br/>CHARACTERISTICS OF PN</b>                                                       | <b>03</b> |                           |

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|  |     | DIODE, ZENER AND LIGHT<br>EMITTIG DIODE                                    |    |  |
|  | 9.  | TO STUDY THE<br>CHARACTARISTICS OF A<br>TRANSISTOR IN CE<br>CONFIGARATION  | 03 |  |
|  | 10. | TO DESIGN A CE<br>AMPLIFIER OF GIVEN<br>GAIN USING VOLTAGE<br>DIVIDER BIAS | 03 |  |

**SEMESTER-VI-(GENERAL)(PHSG)**

**UNDER CBCS**

**SESSION-MAR-JULY,2024**

| PAPER                  | UNIT | TOPIC                                        | NO OF LECTURES | NAME OF THE TEACHER |
|------------------------|------|----------------------------------------------|----------------|---------------------|
| PHSGDSE04T<br>(Theory) | I    | GENERAL PROPERTIES OF NUCLEI                 | 09             | PRODESH SARKAR      |
|                        | II   | NUCLEAR MODELS                               | 11             |                     |
|                        | III  | RADIOACTIVE DECAY                            | 10             |                     |
|                        | IV   | NUCLEAR REACTION                             | 08             |                     |
|                        | V    | INTERACTION OF NUCLEAR RADIATION WITH MATTER | 08             |                     |
|                        | VI   | DETECTOR FOR NUCLEAR RADIATION               | 07             |                     |
|                        | VII  | PARTICLE PHYSICS                             | 14             |                     |