

UG-347

BPHY-21

**B.Sc. DEGREE EXAMINATION –
DECEMBER 2019.**

First Year

Physics

HEAT AND THERMODYNAMICS

Time : 3 hours

Maximum marks : 75

PART A — (5 × 3 = 15 marks)

Answer ALL questions.

Each question carries equal marks.

1. What do you mean by degrees of freedom?
2. Give an example for irreversible process and explain.
3. Explain the significance of Einstein's quantum theory.
4. Give the relation between thermal conductivity of a gas and its absolute temperature and explain.
5. Discuss Fermi-Dirac distribution law.

PART B — ($5 \times 12 = 60$ marks)

Answer ALL questions.

Each question carries equal marks.

6. (a) Define specific heat capacity of a liquid. Experimentally determine the Specific Heat of a Liquid by Joule's Electrical Method.
Or
(b) Explain in detail the Debye theory of specific heat capacity of solids.
7. (a) Explain transport phenomena in gases. Apply kinetic theory to obtain expression for the viscosity of a gas and discuss its dependence on temperature.
Or
(b) State and explain the Planck's theory of black body radiation.
8. (a) What is heat engine? Explain the different parts of a heat engine. Derive an expression for efficiency of a heat engine.
Or
(b) Deduce Maxwell's thermodynamical relations.

9. (a) Derive an expression for the thermal conductivity of gases.

Or

- (b) Experimentally verify Newton's law of cooling and explain its deduction from Stefan's Law.

10. (a) Obtain an expression for Maxwell-Boltzmann distribution.

Or

- (b) Discuss Fermi-Dirac distribution law and show that

$$n_i = \frac{g_i}{e^{(\alpha + \beta E_i) + 1}}.$$

UG-349

BPHYA-02

**B.Sc. DEGREE EXAMINATION –
DECEMBER, 2019.**

Second Year

Physics

GENERAL CHEMISTRY

Time : 3 hours

Maximum marks : 75

PART A — (5 × 3 = 15 marks)

Answer ALL questions.

Each question carries equal marks.

1. Define the terms
(a) Molarity (b) Normality
2. What are substitution reactions? Give an example.
3. What is vulcanization of rubber?
4. Write any three diseases that caused by the deficiency of Vitamin A.
5. What are organic pollutants?

PART B — (5 × 12 = 60 marks)

Answer ALL questions.

Each question carries equal marks.

6. (a) Describe the formation of following bonds with suitable illustration.
- (i) Ionic bond
 - (ii) Co-valent bond
 - (iii) Co-ordinate covalent bond. (12)

Or

- (b) Write short notes on the following
- (i) Indicator in titrations
 - (ii) End points in titrations
 - (iii) Primary and secondary solutions. (12)

7. (a) Explain the following with example
- (i) Addition reaction
 - (ii) Elimination reaction
 - (iii) Substitution reaction. (12)

Or

- (b) Explain the followings
- (i) Fractional distillation
 - (ii) Crystallization
 - (iii) Column chromatography. (12)

8. (a) What are catalyst? Explain positive and negative catalyst with an example. (12)

Or

- (b) Write two methods of preparation of the following

- (i) Polyethylene
- (ii) Polystyrene
- (iii) Teflon. (12)

9. (a) Write short notes on

- (i) Monosaccharides
- (ii) Disaccharides
- (iii) Polysaccharides. (12)

Or

- (b) Write a note on uses of

- (i) Chloroquine
- (ii) Chloramine T
- (iii) Penicillin. (12)

10. (a) Explain the following
- (i) Air pollution
 - (ii) Water pollution
 - (iii) Radioactive pollution. (12)

Or

- (b) Write short notes on
- (i) General precautions for avoiding lab accidents
 - (ii) First aid techniques. (12)

UG – 348

BPHY-22

**B.Sc. DEGREE EXAMINATION —
DECEMBER, 2019.**

Second Year

Physics

ELECTRICITY AND MAGNETISM

Time : 3 hours

Maximum marks : 75

PART A — (5 × 3 = 15 marks)

Answer ALL questions

Each question carries equal marks.

1. Explain the relation between Electric Intensity and Electric potential.
2. State Kirchhoff's laws of electricity.
3. Explain the Faraday's laws of electromagnetic induction.
4. What is a choke coil and explain its uses.
5. Give the importance of Hysteresis curve.

PART B — ($5 \times 12 = 60$ marks)

Answer ALL questions.

Each question carry equal marks.

6. (a) State and prove Gauss theorem. Apply Gauss theorem to calculate electric field and potential due to point charges.

Or

- (b) Explain the significance of divergence and curl of electrostatic fields.

7. (a) What is seebeck effect? Experimentally verify seebeck effect using Carey Foster's bridge.

Or

- (b) Experimentally determine the emf of thermocouple using potentiometer.

8. (a) Explain in detail the Series and Parallel resonance circuit.

Or

- (b) What is a transformer? Explain the types of a transformer and explain in detail the theory of a transformer and discuss its uses.

9. (a) Explain the Langevin's theory of dia and Para magnetism in detail.

Or

- (b) Define hysteresis. Explain the B-H curve and Energy loss due to hysteresis and discuss the importance of hysteresis curves.

10. (a) Derive an expression for the capacitance of a spherical capacitor and explain what are polar and nonpolar molecules.

Or

- (b) Give the experimental determination of mutual inductance.

UG-046

CCE

B.Com./B.B.A. DEGREE EXAMINATION —
DECEMBER, 2019.

ENVIRONMENTAL STUDIES

Time : 3 hours

Maximum marks : 75

PART A — (3 × 5 = 15 marks)

Answer any THREE questions.

All questions carry equal marks.

1. Write about the importance of environmental studies.

சுற்றுச்சூழலியலின் முக்கியத்துவத்தைப் பற்றி எழுதுக.

2. Discuss the over-exploitation of natural resources.

இயற்கை வளங்களை அதிகமாக சுரண்டுவதைப் பற்றி விவாதி.

3. Write about the eco system.

சுற்றுச்சூழல் பற்றி எழுதுக.

4. Give an account on conservation of biodiversity.

பல்லுயிர் பாதுகாப்பு பற்றி எழுதுக.

5. Write about the land resources.

நில வளங்களை பற்றி எழுதுக.

PART B — (4 × 15 = 60 marks)

Answer any FOUR questions.

All questions carry equal marks.

6. Describe the food resources.

உணவு வளங்களை பற்றி எழுதுக.

7. Describe the structure and function of ecosystem.

சுற்றுச்சூழலின் கட்டமைப்பு மற்றும் செயல்பாட்டை பற்றி விவரி.

8. Explain the energy flow in the ecosystem.

சுற்றுச்சூழலில் ஆற்றல் ஓட்டத்தைப் பற்றி விளக்குக.

9. Give brief account on India as a mega diversity nation.

இந்தியாவைப் பொறுத்தவரையில் ஒரு மிகப்பெரிய பன்முகத் தன்மை கொண்ட நாடு எனக் குறிப்பிடுக.

10. Discuss the types and effects of air pollution.

காற்று மாசுபாட்டின் வகைகள் மற்றும் விளைவுகளை பற்றி விவாதி.

11. Discuss any five legal provisions to protect the environment.

சுற்றுச்சூழலைப் பாதுகாப்பதற்கான ஏதேனும் ஐந்து சட்ட விதிகளைப் பற்றி விவாதி.

12. Discuss the role of information technology in environment and human health.

சுற்றுச்சூழலுக்கும் மனித ஆரோக்கியத்திற்கும் உள்ள தகவல் தொழில் நுட்ப பங்கு பற்றி விவாதி.
