

B.Sc.(FS) Semester - 2 (CBCS) Examination
March/April – 2023 (New Course)
Physics (CORE)

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Q.1(A) Answer the following questions. (Any Two) (10)**
1. What is Doppler Effect? Discuss its effect when observer is stationary and source is moving?
 2. Explain velocity of transverse wave on a string.
 3. Explain speed of sound in a material medium.
- Q.1(B) Answer the following question. (Any One) (04)**
1. Write a note on acoustics of buildings.
 2. Explain in brief: Laws of transverse vibrations of a string.
- Q.2(A) Answer the following questions. (Any Two) (10)**
1. Explain characteristics of CE transistor connection.
 2. Discuss the use of zener diode as a voltage regulator.
 3. What is half wave rectifier? Prove that the maximum efficiency of a half wave rectifier is 40.6%.
- Q.2(B) Answer the following question. (Any One) (04)**
1. Why common emitter (CE) configuration is most preferred in circuit?
 2. Describe the basic principle of filter circuit.
- Q.3(A) Answer the following questions. (Any Two) (10)**
1. Explain Lloyd's single mirror and derive the formula of wavelength of light.
 2. Discuss interference by reflected light.
 3. Explain Huygens Principle of wavefront.
- Q.3(B) Answer the following question. (Any One) (04)**
1. Write the conditions for interference of light.
 2. Describe superposition of waves.
- Q.4(A) Answer the following questions. (Any Two) (10)**
1. Write a short note on zone plate.
 2. Explain Fraunhofer diffraction due to a single slit.
 3. Discuss diffraction pattern of a straight edge.
- Q.4(B) Answer the following question. (Any One) (04)**
1. Give the difference between Fresnel and Fraunhofer diffraction.
 2. Compare the grating spectra with prism spectra.
- Q.5(A) Answer the following questions. (Any Two) (10)**
1. Discuss electric field around uniformly charged spherical shell.
 2. Discuss energy stored in magnetic field.
 3. State and derive Gauss's theorem.
- Q.5(B) Answer the following question. (Any One) (04)**
1. Write a note on mutual inductance.
 2. Discuss electric field around an infinite line of charge.
