

B.Sc. (FS) Semester - 2 (CBCS) Examination**June/July-2022 [NEW COURSE]****Physics (CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

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

Q.1 (A) Answer any two questions. [10]

1. Explain velocity of transverse wave on a string.
2. Explain intensity and loudness of sound waves.
3. Explain Beats in detail.

Q.1 (B) Answer any one question. [4]

1. Explain normal modes of the string.
2. Write a note on Acoustics of buildings.

Q.2 (A) Answer any two questions. [10]

1. Explain use of zener diode as a voltage regulator.
2. Discuss working of an NPN transistor and explain importance of transistor action.
3. Explain common base connection and derive an expression for total collector current.

Q.2 (B) Answer any one question. [4]

1. Write the comparison between three configurations of transistor.
2. Write a note on choke input filter.

Q.3 (A) Answer any two questions. [10]

1. Explain Huygens principle of wavefront.
2. Explain interference by transmitted light.
3. Explain Fresnel's biprism and derive the formula of wavelength of light and 'd'.

Q.3 (B) Answer any one question. [4]

1. Write a note on wavefront.
2. Write the conditions for interference of light.

Q.4 (A) Answer any two questions. [10]

1. Explain fraunhofer diffraction due to a single slit.
2. Explain action of zone plate.
3. Write the comparison between zone plate and convex lens.

Q.4 (B) Answer any one question. [4]

1. Write a note on zone plate.
2. Write a note on plane diffraction grating.

Q.5 (A) Answer any two questions. [10]

1. State and derive Gauss's theorem.
2. Derive an equation of electric field due to infinite line of charge.
3. Discuss Faraday's law of electromagnetic induction.

Q.5 (B) Answer any one question. [4]

1. Explain electric flux.
2. Write a note on Mutual Inductance.
