

B.Sc. Semester - 2 (CBCS) Examination**March/April- 2018****PHYSICS-201****(CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

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

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- Que-1 (A) Answer the following question (any one). (07)
- (1) Discuss standing waves on a string.
 - (2) Write a note on Doppler effect.
- Que-1 (B) Answer the following question (any one). (04)
- (1) Derive an expression of velocity of transverse wave on a string.
 - (2) Derive an expression of intensity of sound.
- Que-1 (C) Answer the following question (any three). (03)
- (1) Give the names of types of wave motion.
 - (2) The velocity of transverse wave on a string is directly proportional to
 - (3) In standing waves, the points at where the amplitude is zero are called.....
 - (4) Write relation between loudness and intensity.
 - (5) The change in frequency of wave due to motion of the source or observer is called
- Que-2 (A) Answer the following question (any one). (07)
- (1) Describe the types of filter circuit for rectifier.
 - (2) Write a note on characteristic of CE configuration.
- Que-2 (B) Answer the following question (any one). (04)
- (1) A power supply-1 delivers $12 V_{dc}$ with ripple of $6.6V_{rms}$ while power supply-2 delivers $36 V_{dc}$ with ripple of $0.36 V_{rms}$. Which is better power supply, calculate.
 - (2) Discuss three configurations of transistor in short.
- Que-2 (C) Answer the following question (any three). (03)
- (1) A-P junction diode conducts current easily when it is biased.
 - (2) The theoretical maximum efficiency of the half wave rectifier is
 - (3) Zener diode is used for regulation.
 - (4) For Transistor circuit, $I_b + I_c =$
 - (5) For audio frequency amplification, configuration is used.
- Que-3 (A) Answer the following question (any one). (07)
- (1) Explain interference by reflected light.
 - (2) Explain Fresnel's biprism and derive the formula of wave length of light and fringe width β .
- Que-3 (B) Answer the following question (any one). (04)
- (1) Discuss wave front.
 - (2) Two narrow and parallel slits 0.1 cm apart are illuminated with a monochromatic light of wave length 589.3 nm . The interference pattern is observed at a distance 10 cm from the slits. Calculate the fringe width.
- Que-3 (C) Answer the following question (any three). (03)
- (1) coloured rays of a dispersed white light deviates more when passes through a prism.

- (2) Path difference on reflection from a denser medium is
- (3) The diameter of the Newton's dark ring, $D \propto$
- (4) The central region in Newton's ring is
- (5) Soap bubble looks coloured due to
- Que-4 (A) Answer the following question (any one). (07)
- (1) Explain zone plate in detail with construction and theory.
- (2) Discuss diffraction pattern of a straight edge.
- Que-4 (B) Answer the following question (any one). (04)
- (1) Compare the Fresnel diffraction and Fraunhofer diffraction.
- (2) The radius of the second ring of a zone plate is 1 mm. If the plane waves of wave length $5000 \text{ \AA}$ fall on the plate, find where a screen should be placed so that light is focused at the brightest spot.
- Que-4 (C) Answer the following question (any three). (03)
- (1) Interference produced fringes of thickness.
- (2) are important for analysis of Fresnel diffraction.
- (3) The area of each half period zone is
- (4) Focal length formula for convex lens is $\frac{1}{f} =$
- (5) The focal length formula for zone plate is $f =$
- Que-5 (A) Answer the following question (any one). (07)
- (1) Write a note on Nicol prism.
- (2) Describe cardinal points of an optical system.
- Que-5 (B) Answer the following question (any one). (04)
- (1) Write short note on polarization by reflection.
- (2) Derive Newton's formula for co-axial lens system.
- Que-5 (C) Answer the following question (any three). (03)
- (1) Write an equation of Brewster's law.
- (2) Splitting of white light into different colours is known as
- (3) In calcite the velocity of E-rays is than O-rays.
- (4) Unit of refractive index is
- (5) Dispersive power of prism =
