- **Q.1** A parallel monochromatic beam of light is incident normally on a narrow slit. A diffraction pattern is formed on a screen placed perpendicular to the direction of the incident beam. At the first minimum of the diffraction pattern, the phase difference between the rays coming from the edges of the slit is **(A)**0 **(B)** $\frac{\pi}{2}$ **(C)** π **(D)** 2π
- Q.2 In each of the following questions a statement of Assertion (A) is given followed by a corresponding statement of reason (R) just below it of the statement mark the correct answer. Assertion (A): The clouds in the sky generally appear to be whitish. Reason (R): Diffraction due to clouds is efficient in equal measures at all wavelengths.
 (A)Both A and R are true and R is the correct explanation of A.
 (B)Both A and R are true and R is not the correct explanation of A.
 (C)A is true and R is false.
 (D)A is false and R is true.
- **Q.3** If we observe the single slit Fraunhofer diffraction with wavelength λ and slit width b, the angular width (θ_w) of the central maxima is 2 θ . On decreasing the slit width for the same λ **(A)** θ increases
 - (B)θ remains unchanged
 (C)θ decreases
 (D)θ increases or decreases depending on the intensity of light
- Q.4 Assertion (A): We cannot observe the diffraction pattern from a wide slit illuminated by monochromatic light.Reason (R): In diffraction pattern all the bright bands are not of the same intensity.

(A)Both A and R are true and R is the correct explanation of A.

- (B)Both A and R are true and R is not the correct explanation of A.
- (C)A is true and R is false.

(D)A is false and R is true.

Q.5 In a single slit diffraction experiment, yellow light is replaced by X-rays. How will the diffraction pattern be affected?

(A)No change in diffraction pattern.	(B)Width of diffraction bands increases.
(C) Width of diffraction bands decreases.	(D) Diffraction pattern will disappear.

- Q.6Visible light of wavelength 550 nm falls on a single slit and produced its second diffraction minimum
at an angle of 45° relative to the incident direction of the light. What is the width of the slit (in μm)?
(A) 2.4(B) 1.4(C) 1.56(D) 2.56
- Q.7In a single slit diffraction experiment, first minimum for red light (660 nm) coincides with first
maximum of some other light of wavelength λ . The value of λ in nm is
(A)510(B)470(C)540(D)440

Q.8 Find the ratio of intensity at 1st maximum to intensity at 2nd maximum in a single slit diffraction experiment.
 (A)2.78 (B)1 (C)2.56 (D)3.82

- Q.9 The central maximum in the diffraction pattern of a circular aperture is known as
 (A) the Abbe disc
 (B) the Airy disc
 (C) the Poisson spot
 (D) the Rayleigh spot
- **Q.10** A convex lens of diameter 8 cm is used to focus to parallel beam of light of wavelength 6200 Å. If the light be focused at a distance of 20 cm from the lens. What would be the radius of the central bright spot formed?

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(A)2.89 um (B)1.5 um (C)1.89 um (D)1.78 um
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ANSWER KEY

Q.	1	2	3	4	5	6	7	8	9	10
Sol.	(D)	(C)	(A)	(B)	(D)	(C)	(D)	(A)	(B)	(C)