Physics Questions

Here are the physics-based Very Short Answer and Short Answer type questions converted into text from the provided image:

Very Short Answer Type Questions (1 Mark)

1. When a tiny circular obstacle is placed in the path of light from a distant source, a bright spot is seen at the centre of the shadow of the obstacle. Explain why?
   [NCERT][Delhi 2009, 18]
2. Give two differences between interference and diffraction of light.
   [AI 2008, Delhi 2009]
3. How does the angular separation between fringes in a single slit diffraction experiment change when the distance of separation between the slit and screen is doubled?
4. In a single slit diffraction experiment, the width of the slit is made double the original width. How does this affect the size and intensity of the central diffraction band?
   [AI 2012][Delhi 2018]
5. How does the intensity of the central maximum change if the width of the slit is halved in a single slit diffraction experiment?
   [Foreign 2002]
6. A parallel beam of monochromatic light falls normally on a single narrow slit. How does the angular width of the principal maximum in the resulting diffraction pattern depend on the width of the slit?
   [AI 2008 C]

Short Answer Type Questions-I (2 Marks)

10. Ray optics is based on the assumption that light travels in a straight line diffraction effects (observed when light propagates through small apertures/slits or around small obstacles) disprove this assumption. Yet the geometrical optics assumption is so commonly used in understanding the location and several other properties of images in optical instruments. What is the justification?
    [NCERT][HOTS]
11. Two towers on the top of two hills are 40 km apart. The line joining them passes 50 m above a hill halfway between the towers. What is the longest wavelength of radio waves which can be sent between the towers without appreciable diffraction effects?
    [NCERT][HOTS]
12. When a low flying aircraft passes overhead, we sometimes notice a slight shaking of the picture of our TV screen. Suggest a possible explanation.
    [NCERT]
13. A parallel beam of monochromatic light falls normally on a narrow slit of width 'a' to produce a diffraction pattern on the screen placed parallel to the plane of the slit. Use Huygen's principle to explain that the central bright maxima is twice as wide as the other maxima.
    [Delhi 2014 C]
14. Diffraction is common in sound and not common in light waves. Why?

15. In a single slit diffraction experiment, the slit width is made double that of the original width. What would happen to the size and intensity of the central diffraction band? Give a reason for your answer.
[AI 2008, Foreign 2012, Delhi 2012][HOTS]