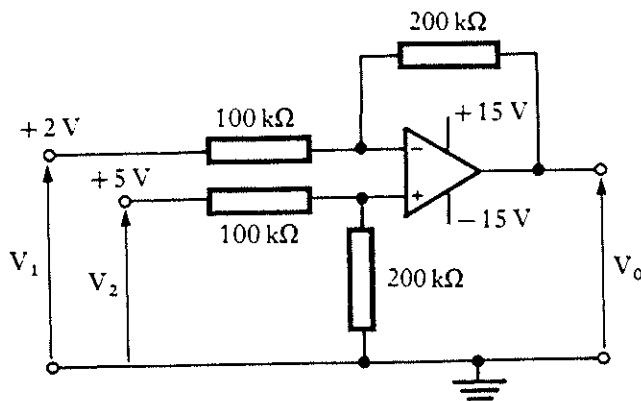


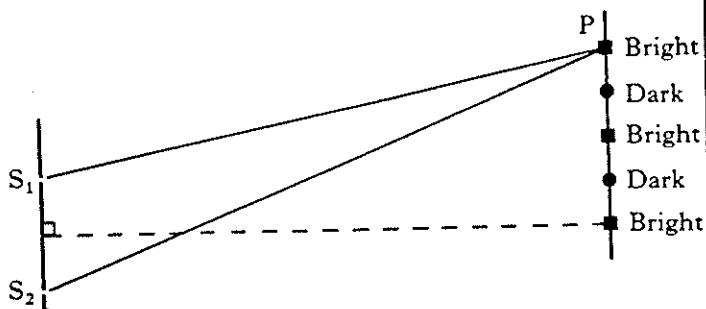
20. In the circuit below, the op-amp operates from a  $\pm 15\text{ V}$  supply.



With the input voltages  $V_1$  and  $V_2$  as shown, what would be the output voltage  $V_0$ ?

- A + 3 V
- B - 3 V
- C + 6 V
- D - 6 V
- E +14 V

21. The figure shows the paths of light from two slits  $S_1$  and  $S_2$  acting as coherent sources to produce a maximum of intensity at P.



The figure also indicates the series of maxima and minima of intensity.

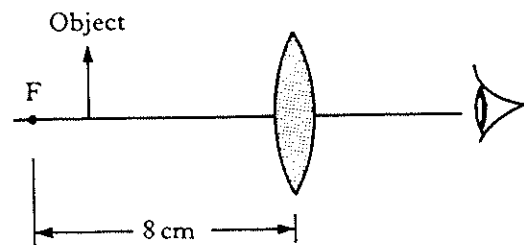
If the light has a wavelength of 400 nm, what is the path difference  $S_2P - S_1P$ ?

- A 200 nm
- B 400 nm
- C 600 nm
- D 800 nm
- E 1000 nm

22. A white light source is viewed through a prism and a spectrum of colours is seen. If the prism is replaced by a diffraction grating, which of the following would be true?

- I Spectra will be produced on both sides of the central position.
  - II There will be a white central image of the source.
  - III Blue light will be diffracted more than red.
- A I only
  - B II only
  - C I and II only
  - D II and III only
  - E I, II and III

23. The convex lens shown in the diagram has a focal length of 8 cm.



The image of the object seen by the eye will be

- A real, upright and magnified
- B real, inverted and magnified
- C real, inverted and diminished
- D virtual, upright and diminished
- E virtual, upright and magnified.