

12. (a) (i) Describe the factors responsible for lighting scheme for roads. (10)
(ii) Draw the fluorescent lamp circuit. (6)

Or

- (b) A 200 c.p. lamp is hung 4 metres above the centre of a circular area of 5 metre diameter. Determine the illumination at the (i) Centre of area (ii) Periphery of the area (iii) Average illumination. Also determine the average illumination if reflector of 80% efficiency is used. (16)
13. (a) (i) Discuss the requirements of the good heating materials. (8)
(ii) Demonstrate the steps to be used for designing a heating element. (8)

Or

- (b) Describe the working principle and types of electric arc welding. (16)
14. (a) (i) List the advantages and disadvantages of concentrating collectors. (10)
(ii) Discuss about solar radiation geometry. (6)

Or

- (b) Describe the principles of conversion of solar radiation into heat energy. (16)
15. (a) Describe the various components of a WECS and the power generated from WECS. (16)

Or

- (b) Illustrate the basic theory of wind turbine blade aerodynamics. (16)
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