

Electric Illumination MCQ PDF

1. Light.....

- (a) is a form of heat energy.
- (b) is a form of electrical energy.
- (c) consists of electromagnetic waves.
- (d) consists of shooting particles.

Answer: (c) consists of electromagnetic waves.

2. Radiant efficiency of the luminous source depends on

- (a) temperature of the source.
- (b) wavelength of light rays.
- (c) shape of the source.
- (d) all of the above.

Answer: (a) temperature of the source.

3. A substance which changes its electrical resistance when illuminated by light is called

- (a) photoconductive.
- (b) photovoltaic.
- (c) photoelectric.

(d) none of the above.

Answer: (a) photoconductive.

4. Materials which reflect all wavelength in the spectrum of light appear to be

(a) opaque.

(b) transparent.

(c) black to white.

(d) green to red.

Answer: (c) black to white.

5. An object, which appears red to the eyes, absorbs

(a) blue radiations.

(b) violet radiations.

(c) green radiations.

(d) all of the above.

Answer: (d) all of the above.

6. The sensors in the eye are known as

(a) retina and antenna.

(b) wires and nerves.

(c) rods and cones.

(d) none of the above.

Answer: (c) rods and cones.

7. The color temperature of daylight is about

(a) 100 K

(b) 200 K

(c) 500 K

(d) 600 K

Answer: (d) 600 K

8. Sky appears blue due to

(a) radiation.

(b) reflection.

(c) refraction.

(d) scattering of light over dust particles.

Answer: (d) scattering of light over dust particles.

9. Color of light depends upon

(a) velocity of light.

(b) frequency.

(c) wavelength.

(d) both (b) and (c).

Answer: (d) both (b) and (c).

10. The wavelength of 5,500 Å will give light of

- (a) green color.
- (b) red color.
- (c) orange color.
- (d) yellow-green color.

Answer: (d) yellow-green color.

11. Which of the following color has wavelength between blue and yellow ?

- (a) Violet.
- (b) Orange.
- (c) Red.
- (d) Green.

Answer: (d) Green.

12. Luminous flux is

- (a) the rate of energy radiation in the form of light waves.
- (b) the part of light energy, radiated by Sun that is received on earth.
- (c) measured in lux.

Answer: (a) the rate of energy radiation in the form of light waves.

13. Candle power is

(a) the luminous flux emitted by the source per unit solid angle.

(b) the light radiating capacity of a source in a given direction.

(c) the unit of illumination.

Answer: (b) the light radiating capacity of a source in a given direction.

14. Glare is caused due to

(a) excessive luminance.

(b) excessive lighting contrast in the field of vision.

(c) either (a) or (b).

Answer: (c) either (a) or (b).

15. A perfect diffuser surface is one that

(a) transmits all the incident light.

(b) absorbs all the incident light.

(c) diffuses all the incident light.

(d) all of the above.

Answer: (d) all of the above.

16. The illumination at a surface due to a source of light placed at a distance 'd' from the surface varies as

(a) $1/d^2$

(b) $1/d$

(c) d

Answer: (a) $1/d^2$

17. The illumination at various points on a horizontal surface illuminated by the same source varies as

(a) $\cos \theta$

(b) $\cos^2 \theta$

(c) $\cos^3 \theta$

(d) $1/\cos \theta$

Answer: (c) $\cos^3 \theta$

18. The melting point of tungsten is

(a) $3,400^\circ\text{C}$

(b) $2,800^\circ\text{C}$

(c) $2,600^\circ\text{C}$

(d) $2,400^\circ\text{C}$

Answer: (a) 3,400°C

19. The vacuum inside an incandescent lamp is of the order of

(a) 10^{-2} mm Hg

(b) 10^{-4} mm Hg

(c) 10^{-6} mm Hg

(d) 10^{-8} mm Hg

Answer: (b) 10^{-4} mm Hg

20. The rate of evaporation of tungsten filament in a lamp depends upon

(a) exhaust tube diameter.

(b) glass shell diameter.

(c) vapor pressure inside.

(d) none of the above.

Answer: (c) vapor pressure inside.

21. Heat from the lamp filament is transmitted to the surrounding mainly through

(a) circulation.

(b) conduction

(c) convection.

(d) radiation.

Answer: (d) radiation.

22. Which of the following material is most commonly used for the filaments in incandescent lamps ?

(a) Tungsten.

(b) Osmium.

(c) Tantalum.

(d) Silver.

Answer: (a) Tungsten.

23. A zero watt incandescent lamp consumes power of

(a) zero watt.

(b) 5 - 10 W.

(c) about 15 W.

(d) about 25 W.

Answer: (b) 5 - 10 W.

24. The safe operating temperature of a tungsten filament lamp is

(a) 1,000°C

(b) 2,000°C

(c) 3,000°C

(d) 3,500°C

Answer: (c) 3,000°C

25. The output of a tungsten filament depends on

(a) size of the shell.

(b) size of the lamp.

(c) temperature of filament.

(d) all of the above.

Answer: (c) temperature of filament.

27. What percentage of the input energy is radiated by filament lamps ?

(a) 60 - 70 per cent.

(b) 40 - 50 per cent.

(c) 25 - 30 per cent.

(d) 10 - 15 per cent.

Answer: (d) 10 - 15 per cent.

28. An electric bulb, when broken, produces bang. It is on account of

(a) vacuum inside the bulb.

(b) pressure inside is equal to that outside.

(c) pressure of air in the bulb.

(d) none of the above.

Answer: (a) vacuum inside the bulb.

29. In an incandescent lamp, bird cage filament is usually used in vacuum bulb so as to

(a) increase the life span of the filament.

(b) give uniform radiations.

(c) reduce the oxidation phenomenon.

(d) reduce the convection losses.

Answer: (b) give uniform radiations.

30. Filament lamps normally operate at a power factor of

(a) 0.5 lagging.

(b) 0.8 lagging.

(c) unity.

(d) 0.85 leading.

Answer: (c) unity.

31. Most affected parameter of a filament lamp due to variation in operating voltage is

(a) life.

(b) light output.

(c) luminous efficiency.

(d) wattage.

Answer: (a) life.

32. The lumens output of an incandescent lamp with the variation in operating voltage is given as lumens output $\propto V^n$ where n is a constant. The value of n for tungsten is

(a) from 1.0 to 2.2

(b) from 3 to 4

(c) from 8 to 10

(d) from 10 to 12

Answer: (b) from 3 to 4

33. Which gas is sometimes used in filament lamps ?

(a) Nitrogen.

(b) Carbon dioxide.

(c) Argon.

(d) Krypton.

Answer: (c) Argon.

34. Which of the following vapor/gas will give yellow color in a filament lamp ?

(a) Helium.

(b) Mercury.

(c) Magnesium.

(d) Sodium.

Answer: (d) Sodium.

35. Magnesium vapor in a filament lamp gives

(a) green color light.

(b) pink color light.

(c) blue color light.

(d) white color light.

Answer: (a) green color light.

36. The gas used in a gas-filled filament lamp is

(a) helium.

(b) oxygen.

(c) nitrogen.

(d) ozone.

Answer: (c) nitrogen.

37. In filament lamps, coiled coil filaments are used in

(a) colored lamps.

(b) gas-filled lamps.

(c) low wattage lamps.

(d) higher wattage lamps.

Answer: (b) gas-filled lamps.

38. In electric discharge lamps light is produced by

(a) magnetic effect of current.

(b) heating effect of current.

(c) cathode ray emission.

(d) ionization in a gas or vapor.

Answer: (d) ionization in a gas or vapor.

39. In electric discharge lamps for stabilization of arc

(a) a choke is connected in series with the supply.

(b) a variable resistance is connected in series with the circuit.

(c) a condenser is connected across the supply.

(d) any of the above.

Answer: (a) a choke is connected in series with the supply.

40. Glow lamps

(a) have hot cathode.

(b) have cold cathode.

(c) draw more power.

(d) cannot withstand shocks.

Answer: (b) have cold cathode.

41. Halogen lamps have the advantage(s) of

(a) reduced dimensions of the lamp.

(b) better color rendition and longer life (about 2,000 hours).

(c) high operating temperature with increased luminous efficiency.

(d) all of the above.

Answer: (d) all of the above.

42. The filament of a GLS lamp is made of

(a) aluminium.

(b) tungsten.

(c) carbon.

(d) copper.

Answer: (b) tungsten.

43. Which of the following is not the GLS lamp of the standard rating ?

(a) 15 W

- (b) 40 W
- (c) 75 W
- (d) 100 W

Answer: (c) 75 W

44. The luminous efficiency of GLS lamps is normally in the range of lumens/watt.

- (a) 100 to 150
- (b) 75 to 100
- (c) 50 to 75
- (d) 10 to 18

Answer: (d) 10 to 18

45. Nitrogen or argon is filled in GLS lamps so as to

- (a) retard evaporation of tungsten filament.
- (b) improve efficiency.
- (c) change the color of the light.
- (d) reduce the glare.

Answer: (a) retard evaporation of tungsten filament.

46. In case of frosted GLS lamps, frosting of shell is done by

- (a) acid etching.
- (b) ammonia.
- (c) ozone.
- (d) salt water.

Answer: (b) ammonia.

47. In case of GLS lamps the increase in supply voltage reduces

- (a) power consumption.
- (b) lumens output.
- (c) life.
- (d) efficiency.

Answer: (c) life.

48. Sodium vapor lamp needs an ionization voltage of about

- (a) 5 V
- (b) 20 V
- (c) 50 V
- (d) 100 V

Answer: (a) 5 V

49. The ignition voltage for a sodium lamp is about

- (a) 100 - 125 V
- (b) 200 - 240 V
- (c) 300 - 400 V
- (d) 400 - 600 V

Answer: (d) 400 - 600 V

50. When a sodium vapor lamp is switched on, initially the color is

- (a) red.
- (b) pink.
- (c) yellow.
- (d) blue.

Answer: (b) pink.

51. The color of light given out by a sodium vapor discharge lamp is

- (a) pink.
- (b) bluish green.
- (c) yellow.
- (d) blue.

Answer: (c) yellow.

52. An auto-transformer used with a sodium vapor lamp should have

- (a) high step-up ratio.
- (b) high step-down ratio.
- (c) high leakage reactance.
- (d) high resistance.

Answer: (c) high leakage reactance.

53. Leak transformer in a sodium vapor lamp initially provides

- (a) high current.
- (b) low voltage.
- (c) high voltage.

Answer: (c) high voltage.

54. In a sodium vapor discharge lamp the neon gas

- (a) changes the color of light.
- (b) prevents vaporization of filament.
- (c) acts as a shield around the filament.
- (d) assists in developing enough heat to vaporize the sodium.

Answer: (d) assists in developing enough heat to vaporize the sodium.

55. The capacitor is used in auto-transformer circuit of a sodium vapor lamp in order to

- (a) regulate discharge voltage.
- (b) improve the circuit power factor.
- (c) control lamp illumination level.
- (d) protect the lamp against over-voltage.

Answer: (b) improve the circuit power factor.

56. The sodium vapor lamp

- (a) is only suitable for ac and so needs choke control.
- (b) needs capacitor in its auto-transformer circuit to improve the power factor which is very low (about 0.3 lagging).
- (c) comes up to its rated output in approximately 15 minutes.
- (d) all of the above.

Answer: (d) all of the above.

57. The luminous efficiency of a sodium vapor lamp is lumens per watt.

- (a) 40 - 50
- (b) 50 - 100

(c) 120 - 200

(d) 10 - 12

Answer: (a) 40 - 50

58. Phosphor zinc silicate produces light of

(a) pink color.

(b) green color.

(c) red color.

(d) yellow color.

Answer: (b) green color.

59. A mercury vapor lamp gives light of

(a) pink color.

(b) yellow color.

(c) greenish-blue color.

(d) red color.

Answer: (c) greenish-blue color.

60. High pressure mercury vapor lamps

(a) are similar in construction to sodium vapor lamps.

(b) need 4 or 5 minutes to attain full brilliancy.

(c) are generally used for general industrial lighting, railway yards, work areas, shopping centers etc.

(d) all of the above.

Answer: (d) all of the above.

61. In high pressure mercury vapor lamps

(a) the main electrodes are made of tungsten wire in the form of helix.

(b) the choke is provided to limit the current to a safe value.

(c) in addition to two main electrodes a starting (auxiliary) electrode is connected through a high resistance .

(d) all of the above.

Answer: (d) all of the above.

62. The luminous efficiency of high pressure mercury vapor lamps ranges from lumens per watt.

(a) 30 to 40

(b) 60 to 100

(c) 100 to 150

(d) 250 to 400

Answer: (a) 30 to 40

63. In mercury iodide lamps

- (a) a number of iodides are added, in addition to mercury, to fill up the gaps in the light spectrum.
- (b) a separate ignition device, in addition to the choke, is provided.
- (c) both (a) and (b).
- (d) none of the above.

Answer: (c) both (a) and (b).

64. Mercury iodide lamps

- (a) are similar in construction to high pressure mercury vapor lamps.
- (b) have luminous efficiency of the order of 80 lumens per watt.
- (c) are suitable for applications in the field of floodlighting, industrial lighting and public lighting.
- (d) all of the above.

Answer: (d) all of the above.

65. Which of the following lamps is a cold cathode lamp ?

- (a) Sodium vapor lamp.
- (b) Neon lamp.
- (c) Mercury vapor lamp.

(d) None of the above.

Answer: (b) Neon lamp.

66. Neon lamps

(a) are of the size of ordinary incandescent lamps.

(b) have power consumption of the order of 5 watts.

(c) are used as indicator lamps, night lamps, for determination of polarity of dc mains.

(d) all of the above.

Answer: (d) all of the above.

67. In neon signs argon gas is used to give

(a) red color.

(b) blue color.

(c) pink color.

(d) green color.

Answer: (a) red color.

68. In neon signs, neon with a mixture of mercury is used to give

(a) blue color.

(b) green color.

(c) pink color.

(d) yellow color.

Answer: (b) green color.

69. The electrodes of neon tube work at

(a) very low temperatures.

(b) ordinary voltage.

(c) 2 kV to 6 kV.

(d) 33 kV.

Answer: (c) 2 kV to 6 kV.

70. Neon tubes are widely used for

(a) advertising.

(b) indoor lighting.

(c) road signaling.

(d) airport lighting.

Answer: (a) advertising.

71. The vapor discharge tube used for domestic light has

(a) one filament.

(b) two filaments.

(c) four filaments.

(d) no filament.

Answer: (b) two filaments.

72. The fluorescent tube is coated from inside with a thin layer of fluorescent material in the form of powder in order to

(a) absorb invisible ultraviolet rays and radiate visible rays.

(b) improve the appearance.

(c) reduce glare.

(d) improve life.

Answer: (a) absorb invisible ultraviolet rays and radiate visible rays.

73. A stabilizing choke is connected in the fluorescent tube circuit so as to

(a) reduce the flicker.

(b) act as a ballast in operating conditions and provide a voltage impulse for starting.

(c) act as a starter.

(d) avoid radio-interference.

Answer: (b) act as a ballast in operating conditions and provide a voltage impulse for starting.

74. A capacitor is connected across the fluorescent tube circuit in order to

- (a) eliminate the noise.
- (b) limit the current.
- (c) improve the power factor of the tube circuit.
- (d) all of the above.

Answer: (c) improve the power factor of the tube circuit.

75. Which of the following is present inside the fluorescent tube ?

- (a) Helium and oxygen.
- (b) Argon and neon.
- (c) Argon and carbon dioxide.
- (d) Mercury vapor.

Answer: (d) Mercury vapor.

76. In a fluorescent tube, a ballast resistance is connected in series with the choke

- (a) when the tube is operated on dc supply.
- (b) when the tube is operated on ac supply.
- (c) to reduce radio-interference.

(d) to reduce stroboscopic effects.

Answer: (a) when the tube is operated on dc supply.

77. For operation of fluorescent tube on dc supply the additional device incorporated in the tube circuit is a

(a) transformer.

(b) resistor.

(c) inductor.

Answer: (b) resistor.

78. The light of fluorescent tube appears cooler than that from an incandescent lamp. This is due to the fact that

(a) the tube consumes less power.

(b) surface area of tube is larger than that of the incandescent lamp.

(c) tungsten is not used in the tube .

(d) none of the above.

Answer: (c) tungsten is not used in the tube .

79. Sometimes the wheels of the rotating machinery in fluorescent tube lighting, appear to be stationary . This is due to

(a) luminescence effect.

(b) light fluctuations.

(c) stroboscopic effect.

(d) all of the above.

Answer: (c) stroboscopic effect.

80. The flicker effect of fluorescent lamps is more pronounced at

(a) lower voltages.

(c) higher frequencies.

(b) higher voltages.

(d) lower frequencies.

Answer: (d) lower frequencies.

81. The frequency of flickers in a fluorescent tube operating at 220 V, 50 Hz supply is

(a) 200 per second.

(b) 100 per second.

(c) 50 per second

(d) 25 per second.

Answer: (b) 100 per second.

82. Radio-interference from a fluorescent tube can be reduced by

- (a) eliminating choke.
- (b) connecting a small capacitor across starter terminals.
- (c) putting two tubes in parallel.
- (d) any of the above.

Answer: (b) connecting a small capacitor across starter terminals.

83. In a mercury vapor lamp light, red objects appear black. This is on account of

- (a) color mixing.
- (b) high wavelengths of red color.
- (c) absence of red light from lamp radiations.
- (d) absorption of red light by the lamp.

Answer: (c) absence of red light from lamp radiations.

84. Blinking of a fluorescent tube may be on account of

- (a) low circuit voltage.
- (b) loose contact.
- (c) defective starter.
- (d) any of the above.

Answer: (d) any of the above.

85. The cost of a fluorescent tube is more than that of an incandescent lamp on account of

- (a) more components in the tube.
- (b) more quantity of glass in the tube.
- (c) more labor required.
- (d) all of the above.

Answer: (d) all of the above.

86. The life of a fluorescent tube is affected by

- (a) low voltage.
- (b) high voltage.
- (c) frequency of switching and blinking.
- (d) all of the above.

Answer: (d) all of the above.

87. The disadvantage(s) of fluorescent tubes in comparison to filament lamps is/are

- (a) high cost.
- (b) noise in choke.
- (c) stroboscopic effect.
- (d) all of the above.

Answer: (d) all of the above.

89. The ratio of radiant heat produced by a fluorescent tube and that by a filament lamp of the same rating is

- (a) 0.2
- (b) 0.35
- (c) 0.6
- (d) 0.75

Answer: (a) 0.2

90. The lamp that cannot sustain much voltage fluctuations is

- (a) sodium vapor lamp.
- (b) mercury vapor lamp.
- (c) incandescent lamp.
- (d) mercury iodide lamp.

Answer: (c) incandescent lamp.

91. The lamp that gives nearly ultraviolet light is

- (a) carbon arc lamp.
- (b) vacuum type filament lamp.
- (c) argon gas filled filament lamp.
- (d) all of the above.

Answer: (a) carbon arc lamp.

92. Power factor is highest in case of

- (a) sodium vapor lamp.
- (b) mercury vapor lamp.
- (c) incandescent lamp.
- (d) neon lamp.

Answer: (c) incandescent lamp.

93. The lamp which gives nearly monochromatic light is

- (a) sodium vapor lamp.
- (b) mercury vapor lamp.
- (c) tungsten filament lamp.
- (d) fluorescent tube.

Answer: (a) sodium vapor lamp.

94. The lamp that does not have separate choke is

- (a) mercury vapor lamp.
- (b) sodium vapor lamp.
- (c) fluorescent tube.
- (d) all of the above.

Answer: (b) sodium vapor lamp.

95. For the same wattage the lamp that will produce minimum radiant heat is

- (a) sodium vapor lamp.
- (b) fluorescent lamp.
- (c) tungsten filament lamp.
- (d) mercury vapor lamp.

Answer: (b) fluorescent lamp.

96. The lamp/tube preferred for air-conditioned spaces is

- (a) sodium vapor lamp.
- (b) mercury vapor lamp.
- (c) fluorescent tube.
- (d) GLS lamp.

Answer: (c) fluorescent tube.

97. The lamp that causes radio-interference is

- (a) fluorescent tube.
- (b) halogen lamp.
- (c) mercury vapor lamp.
- (d) all of the above.

Answer: (a) fluorescent tube.

98. The lamp that cannot be used for dimming is

- (a) cold cathode lamp.
- (b) fluorescent lamp.
- (c) GLS lamp.
- (d) all of the above.

Answer: (b) fluorescent lamp.

99. Which of the following application does not require ultraviolet lamps ?

- (a) Aircraft cockpit dashboard lighting.
- (b) Blue print machines.
- (c) Car lighting.
- (d) None of the above.

Answer: (c) Car lighting.

100. Floodlighting is not used for

- (a) industrial purposes.
- (b) advertising purposes.
- (c) aesthetic purposes.
- (d) any of the above.

Answer: (a) industrial purposes.

101. The lumens emitted from a 100 W incandescent lamp will not increase if

- (a) supply voltage is increased.
- (b) filament temperature is increased.
- (c) the diameter of the glass shell is increased.
- (d) any of the above.

Answer: (c) the diameter of the glass shell is increased.

102. Total flux required in any lighting scheme depends inversely on

- (a) surface area.
- (b) space-height ratio.
- (c) illumination.
- (d) coefficient of utilization.

Answer: (b) space-height ratio.

103. To avoid glare

- (a) object should be viewed from a distance.
- (b) object should be moved constantly.
- (c) object should be viewed from a close vicinity.
- (d) viewer should move constantly.

Answer: (a) object should be viewed from a distance.

104. The illumination level on a surface is least affected by

- (a) candle power of light source.
- (b) ambient temperature.
- (c) type of reflector used.
- (d) distance of the light source.

Answer: (b) ambient temperature.

105. Desired illumination level on the working plane depends upon

- (a) age group of observers.
- (b) whether the object is stationary or moving.
- (c) size of the object to be seen and its distance from the observer.
- (d) all of the above.

Answer: (d) all of the above.

106. Which of the following will need the highest level of illumination ?

- (a) Living room.
- (b) Kitchen.
- (c) Proof reading.
- (d) Hospital wards.

Answer: (c) Proof reading.

107. Which of the following will need the lowest level of illumination ?

(a) Workshop.

(b) Displays.

(c) Railway platform.

(d) Garage.

Answer: (c) Railway platform.

108. The illumination level in houses is in the range of

(a) 20 - 50 lux.

(b) 100 - 200 lux.

(c) 300 - 500 lux.

(d) 700 lux.

Answer: (b) 100 - 200 lux.

109. The illumination level required for precision work is about

(a) 500 - 1,000 lux.

(b) 250 lux.

(c) 100 lux.

(d) 50 lux.

Answer: (a) 500 - 1,000 lux.

110. The illumination level required for important traffic routes carrying fast traffic is about

(a) 30 lux.

(b) 100 lux.

(c) 200 lux.

(d) 5 lux.

Answer: (a) 30 lux.

111. Illumination due to moon light is about

(a) 0.03 lumen/m².

(b) 0.3 lumen/m².

(c) 30 - 50 lumens/m².

(d) 300 - 500 lumens/m².

Answer: (b) 0.3 lumen/m².

112. The luminous flux reaching the working plane least depends on

(a) proportion of the room.

(b) the lumen output of the lamps.

(c) color of the working plane surface.

(d) reflectance of internal surfaces.

Answer: (c) color of the working plane surface.

113. The depreciation factor depends upon

- (a) ageing of the lamp(s).
- (b) lamp cleaning schedule.
- (c) type of work carried out at the premises.
- (d) all of the above.

Answer: (d) all of the above.

114. Utilization factor depends upon

- (a) size of the room.
- (b) space-height ratio of the lamps.
- (c) color of walls/ceiling.
- (d) all of the above.

Answer: (d) all of the above.

115. Glare is reduced by

- (a) increasing the mounting height of the lamp.
- (b) using diffusers.
- (c) using reflectors to cut-off the light at certain angle.
- (d) all of the above.

Answer: (d) all of the above.

116. The glass that transmits the maximum light is

- (a) clear glass.
- (b) milk glass.
- (c) serrated glass.
- (d) opalescent glass.

Answer: (a) clear glass.

117. The glass that transmits the least amount of light is

- (a) clear glass.
- (b) milk glass.
- (c) serrated glass.
- (d) opalescent glass.

Answer: (b) milk glass.

118. The surface that has the lowest reflection factor for white light is

- (a) white oil paint.
- (b) white plaster work.
- (c) blue curtains.
- (d) aluminum sheet.

Answer: (c) blue curtains.

119. The lamp is provided with a reflector in order to

- (a) avoid glare.
- (b) provide better illumination.
- (c) protect the lamp.
- (d) all of the above.

Answer: (d) all of the above.

120. Reflectors are provided with slits at the top so as to

- (a) reduce heating effect.
- (b) reduce color effect.
- (c) introduce chimney effect for cleaning.
- (d) all of the above.

Answer: (d) all of the above.

121. Heat from light source is particularly of importance in

- (a) designing for air-conditioning.
- (b) designing for illumination level.
- (c) designing for floor space utilization.
- (d) all of the above.

Answer: (a) designing for air-conditioning.

122. Dimming systems for lights are used in

- (a) auditoriums.
- (b) theatres.
- (c) ball rooms.
- (d) all of the above.

Answer: (d) all of the above.

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