Answer-key & Solution

SSC JE (Electrical)
MOCK - (141)
Date:- 16.6.2018

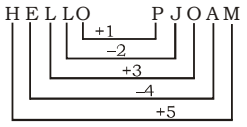
1. C	26. D	51. C	76. B	101. B	126. A	151. C	176. C
2. B	27. C	52. C	77. A	102. C	127. C	152. C	177. B
3. B	28. C	53. C	78. A	103. B	128. C	153. A	178. B
4. C	29. C	54. B	79. D	104. D	129. D	154. A	179. B
5. C	30. A	55. C	80. C	105. B	130. B	155. C	180. A
6. A	31. A	56. A	81. C	106. A	131. A	156. B	181. D
7. B	32. D	57. C	82. B	107. C	132. A	157. C	182. D
8. B	33. C	58. B	83. B	108. B	133. A	158. C	183. A
9. C	34. C	59. D	84. A	109. B	134. C	159. C	184. B
10. B	35. D	60. C	85. A	110. C	135. B	160. B	185. B
11. D	36. A	61. C	86. B	111. A	136. B	161. A	186. C
12. B	37. C	62. A	87. B	112. D	137. A	162. C	187. B
13. B	38. C	63. C	88. A	113. C	138. C	163. C	188. C
14. C	39. D	64. B	89. D	114. C	139. A	164. B	189. D
15. B	40. A	65. D	90. D	115. B	140. C	165. A	190. D
16. C	41. B	66. C	91. A	116. A	141. A	166. A	191. C
17. C	42. D	67. B	92. B	117. B	142. C	167. A	192. D
18. B	43. C	68. A	93. C	118. D	143. D	168. B	193. A
19. D	44. C	69. D	94. A	119. C	144. A	169. D	194. A
20. D	45. B	70. D	95. D	120. A	145. B	170. B	195. C
21. C	46. B	71. C	96. B	121. B	146. A	171. A	196. D
22. C	47. C	72. D	97. D	122. D	147. A	172. C	197. A
23. C	48. B	73. A	98. D	123. D	148. D	173. C	198. B
24. B	49. C	74. C	99. A	124. B	149. B	174. B	199. C
25. C	50. D	75. C	100. A	125. B	150. C	175. C	200. A

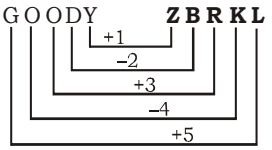
Note : *If your opinion differ regarding any answer, please message the mock test and Question number to 9560620353*

Note : *If you face any problem regarding result or marks scored, please contact : 9313111777*

SOLUTION SSC JE (Elecrtrical) MOCK TEST no. 141

1. (C) $9^2 + 9^2 = 162$
Similarly, $7^2 + 7^2 =$ **98**

2. (B) 

Similarly, 

3. (B) One of the Output Device is Printer.
Similarly, One of the Input Device is **Microphone**.

4. (C) **VWXY** contains only consonants.

5. (C) **Europe** is a continent, so it does not have a particular currency.

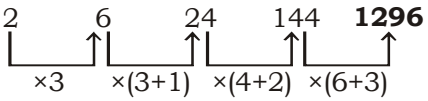
6. (A) **1331** is cubic number.

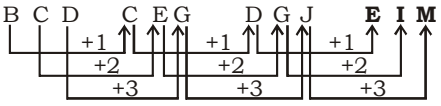
7. (B) Except → Excite → Expect → Experiment → Explicit.

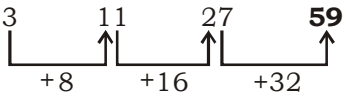
8. (B) 45 B 15 D 9 A 12 C 5
Change the symbol, as per given details,
$45 \div 15 - 9 + 12 \times 5 =$ **54**

9. (C) **MOLEST**

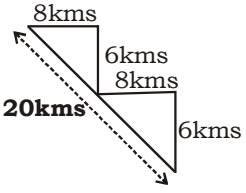
10. (B) Total number = 19 + 19 – 1 = **37**

11. (D) 

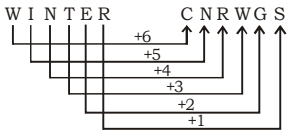
12. (B) 

13. (B) 

14. (C) GARBAGE = 3 Vowels + 4 consonants
$\Rightarrow 3 \times 4 = 12$
Similarly,
MEASURE = 4 Vowels + 3 consonants
$\Rightarrow 4 \times 3 =$ **12**

15. (B) 

16. (C) $\left(\frac{15+23}{2}\right)^2 = 361$ $\left(\frac{16+24}{2}\right)^2 = 400$
$\left(\frac{19+11}{2}\right)^2 =$ **225**

17. (C) 

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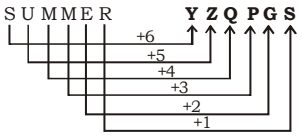
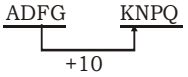
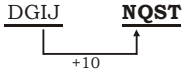


26. (D) Warehouse is place to store grains and a dam is place to store water.

27. (C) 

Similarly, 

28. (C) Second is the square of the first and option (C) follows the same.

29. (C) Penisnula, Island and Cape are the land forms whereas Bay is the body of water.

30. (A) Except Tomato, others are root.

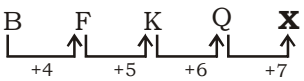
31. (A) 41 – 72 ⇒72 – 41 = 31⇒ 3+ 1 = **4**
12 – 30 ⇒32 – 12 = 18⇒ 1+ 8 = 9
51 – 42 ⇒51 – 42 = 09⇒ 0+ 9 = 9
20 – 11 ⇒20 – 11 = 09⇒ 0+ 9 = 9

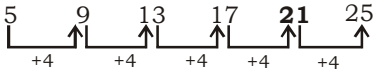
32. (D) Immigrate → immutable → **impassioned** → imperative

33. (C) Number of sheeps left =8

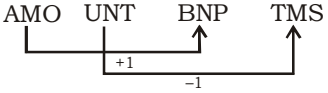
34. (C) Let the age of son= x years
Then, the age of father = (60 – x) years
ATQ,
$5(x-6) = (60-x-6)$
$\Rightarrow 5x - 30 = 54 - x$
$\Rightarrow 6x = 84$
$\Rightarrow x = 14$
$\therefore$ The age of son after 6 years = 14 + 6
= 20 years

35. (D) AMBITION

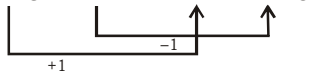
36. (A) 

37. (C) 

38. (C) AMO UNT BNP TMS



Similarly, ARO UND **BSP** **TMC**



39. (D) $5 \times 4 \times 0 \Rightarrow$ 4 0 5
$a \quad b \quad c$ $b \; c \; a$
$3 \times 2 \times 8 \Rightarrow$ 2 8 3
$a \quad b \quad c$ b c a
$1 \times 7 \times 6 \Rightarrow$ **7 6 1**
$a \quad b \quad c$ ***b c a***

40. (A) $56 \times 11 \Rightarrow 56 - 11 = 45 \Rightarrow 4 + 5 = 9$
$37 \times 13 \Rightarrow 37 - 13 \Rightarrow 24 \Rightarrow 2 + 4 = 6$
$42 \times 12 \Rightarrow 42 - 12 = 30 \Rightarrow 3 + 0 = 3$
$87 \times 77 \Rightarrow 87 - 77 = 10 \Rightarrow 1 + 0 =$ **1**

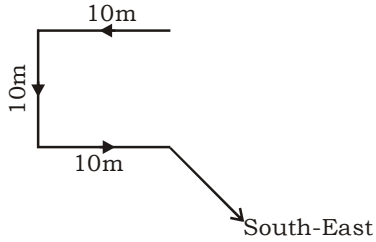
41. (B) Only conclusion II follows.

42. (D) $\frac{14 \times 24}{8} = 42$

$\frac{64 \times 12}{8} = 96$

$\frac{32 \times 18}{8} =$ **72**

43. (C)



∴ He is walking in South-East direction.

44. (C) Total number of triangles =13

45. (B) Required number = 5

51. (C) **Planets, comets, asteroids and other objects** in the solar system orbit the sun. In our solar system, the Earth and the seven other planets orbit the Sun. Most of the objects orbiting the Sun move along or close to an imaginary flat surface. This imaginary surface is called the **Orbit**.

52. (C) **Excretion** is the process by which **metabolic wastes** and **other non-useful materials**, such as faeces, are eliminated from an organism. In vertebrates this is primarily carried out by the **lungs, kidneys and skin**.

53. (C) A **plane mirror** is a mirror with a flat (planar) **reflective surface**.The image formed by a plane mirror is always virtual (meaning that the light rays do not actually come from the image), upright, and of the **same shape and size** as the object it is reflecting.**Virtual images are always erect**.

54. (B) **Lemon appears** bigger than its actual size in water due to the phenomenon called **refraction of light**. Light bends when it travels from one medium to another.

55. (C) The representatives of **princely states** participated in the constituent assembly debates for the **first time** on **twenty-eight April 1947**. The **Negotiating Committee** referred above played a key role in ensuring the participation of representatives of princely states. However, many of the representatives of the princely states did not attend the assembly. **Only sixteen members** representing the (princely) states attended on **twenty-eight April 1947**. Total representation of the (princely) states was limited to **ninety-three Seats**, thus, a major chunk of the princely representatives **did not attend**. Leading among the (princely) states that attended included **Baroda, Bikaner, Rewa, Gwalior, Cochin, Udaipur, Jodhpur** and the leading (princely) states that did not attend included **Hyderabad, Travancore, Mysore and some other states**.

57. (C) **Sir John Ambrose Fleming**, often called a father of modern electronics, is best known for developing the first successful **thermionic valve** (also called a vacuum tube, a diode, or a Fleming valve) in **1904**.

58. (B) **Ashapoorna Devi** was a well-known **novelist** and poet who became the first woman of India awarded with the **Jnanpith Award in 1976**. She was born on 8th of January in 1909 in **Potoldanga**, North Calcutta to the HarendraNath Gupta and Sarola Sundari.

60. (C) Everything north of the equator is known as the **Northern Hemisphere** and everything south of the equator is known as the **Southern Hemisphere**. Lines of **latitude** are called parallels and in total there are **180 degrees** of **latitude**.

61. (C) **Newton's third law** states that every action must have an **equal and opposite reaction.** In **swimming**, when the **hands** and **feet** push against the water, the water pushes back on the swimmer and propels the swimmer forwards.

62. (A) **Bacterial diseases** are any of a variety of **illnesses** caused by **bacteria**. Some diseases caused by bacteria:
- **Tuberculosis**, TB (affects the lungs)
- **Salmonella** (causes food poisoning)
- **Whooping cough** (affects the lungs)

64. (B) **The Sarva Shiksha Abhiyaan** is also known as the Education for All movement or **'Each One Teach One**'. It was introduced in **2000-2001** as the flagship programme run by the Government of India. This scheme is framed to provide useful and relevant elementary education for all children in the age group of **six to fourteen by 2010**.

66. (C) **Sher Shah Suri**, also known as **Sher Khan**, is one of the most remarkable princes to have sat ever on the throne of Delhi. His original name was fared. **Farid's** boyhood was spent in lonely but happy surroundings. Sher Shah Suri was the founder of the Sur Empire in North India.

67. (B) The **Roaring Forties** are strong westerly winds found in the **Southern Hemisphere,** generally between the **latitudes 40 and 50 degrees**. The strong west-to-east air currents are caused by the combination of air being displaced from the **Equator towards the South Pole**, the Earth's rotation, and the scarcity of landmasses to serve as windbreaks.

69. (D) The **Bryophytes** are called **amphibians** of the plant world because they cannot live away from water. While reproducing, the gamate produced by the bryophyte will need water to travel from the male gametophyte to the female one.

71. (C) **Article 18** of the Indian Constitution are related to**"Abolition of titles"**
- No title, not being a military or academic distinction, shall be conferred by the State.
- No citizen of India shall accept any title from any foreign State.
- No person who is not a citizen of India shall, while he holds any office of profit or trust under the State, except without the consent of the President any title from any foreign State.
- No person holding any office of profit or trust under the State shall, without the consent of the President, accept any present, emolument, or office of any kind from or under any foreign State.

72. (D) **Krishna Devaraya** was an emperor of the **Vijayanagara Empire** who reigned from 1509–1529. He is not just a King of Wars and Welfare. He had lot of interest in literature and patronized Telugu, Tamil, Kannada literatures. **Sri Krishna Devaraya** being himself well conversant with literature wrote the book **Amuktamalyada in Telugu**, beautifully describing the pangs of separation suffered by Sri Andal (one of the twelve bhakti-era alwars) for her lover Lord Vishnu.

74. (C) **T.S.Tirumurti** was born in **Chennai**. T S Tirumurti, a 1985-batch officer of Indian Foreign Service, has been was appointed the Secretary (Economic Relations) in the **External Affairs Ministry** on **January 5, 2018**. According to the order issued by the personnel ministry, the Appointments Committee of the Cabinet has approved his appointment to the post, in place of **Vijay Keshav Gokhale**, who was recently named as the **Foreign Secretary**.

75. (C) The Indian Space Research Organization (ISRO) on **12th Jan.** successfully launched a **Cartosat-2 series** weather observation satellite, along with **30 other spacecraft**, using its Polar Satellite Launch **Vehicle (PSLV-C40)**, which lifted off from the Satish Dhawan Space Centre (SDSC) at Sriharikota, Andhra Pradesh.

76. (B) **Bakelite** or **polyoxybenzylmethylenglycolanhydride**, is an early plastic. **Bakelite's resistance** to electricity, heat and chemicals also made it particularly suitable for use in the electrical and automotive industry where it was used for all **non-conductive** parts in electrical components, switchboards, radios and other insulators.

77. (A) At present, there are **38 tiger reserves**, while 6 of them, namely – Kanha, Panna, Bandhavgarh, Pench, Satpura and Sanjay are in MP. **Madhya Pradesh** is also known as the **'Tiger State'** as it harbours nearly **20% of India's Tiger Population** and nearly**10% of the world's tiger population** as per current estimates.

78. (A) The **First Amendment** was passed in **1951** by the Provisional Parliament, which was elected on a limited franchise. The **formal title** of the amendment is the Constitution (First Amendment) Act, 1951. It was moved by the then Prime Minister of India, **Jawaharlal Nehru**, on 10 May 1951 and **enacted** by Parliament on **18th June 1951.**

80. (C) **Bacteria** are examples of the **Prokaryotic Cell** type. An example is **E.coli**. The Prokaryotic Cell. Prokaryotes are unicellular organisms that lack organelles or other internal membrane-bound structures. Therefore, **they do not have a nucleus**, but, instead, generally have a single chromosome: a piece of circular, double-stranded DNA located in an area of the cell called the **nucleoid**.

82. (B) **Qatar**, with **55.4 tons** of carbon dioxide per person, has the **highest footprint globally**, about 10 times the global average. In the region, Qatar is followed by **Kuwait**, the **UAE** and **Bahrain**, which are ranked **third, fourth and fifth** in the world.

83. (B) Indian National Congress and the Muslim League at the joint session of both the parties, held in **Lucknow**, in **December 1916**. The **Lucknow Pact** also established cordial relations between the **two prominent groups** of the Indian National Congress – **Extremist group** led by Bal Gangadhar Tilak and **the moderates.**

85. (A) The Constitution **14th Amendment Act**, passed on **28 December 1962** the First Schedule and **Article 240** were amended and **Article 239A** was added. The Government of Union Territories Act, 1962 created legislatures for the Union Territories of **Himachal Pradesh, Manipur, Tripura, Goa, Daman, Diu and Pondicherry (Puducherry).**

86. (B) **National Commission for Scheduled Castes** (NCSC) is an Indian constitutional body established with a view to provide safeguards against the exploitation of Scheduled Castes to promote and protect their social, educational, economic and cultural interests, special provisions were made in the Constitution.

88. (A) An **oligosaccharide** is a **saccharide polymer** containing a small number (typically three to ten of monosaccharaides (simple sugars). Oligosaccharides can have many functions including **cell recognition and cell binding**. For example, **glycolipids** have an important role in the immune response.

89. (D) The **Manchester of India** is the name given by the **famous textile center of the Manchester**, which is in the Great Britain to the **Ahmedabad**. It is given because of similarity with the famous cotton textile center of Manchester.

91. (A) **BRICS** is an acronym for **Brazil, Russia, India, China and South Africa** and is an association of these countries. They have been identified as the fastest growing economies in the world. They are also seen as having large influence on regional affairs in their area. **Since 2009**, the nations have held an annual summit every year.

92. (B) **Chanakya** was an Indian **teacher**, **philosopher**, **economist**, **jurist** and **royal advisor**. He is traditionally identified as **Kaumilya** or **Vishnugupta**, who authored the ancient Indian political treatise, the Arthashastra. Kautilya is presumably the name of Chanakya's "**gotra**" - **Kotil**. And **Vishnu Gupta** is also called **Chanakya** because he is the **son of Chanak**.

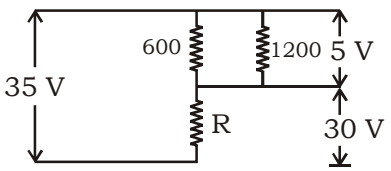
94. (A) **Usha Ananthasubramanian**, MD and CEO, **Allahabad Bank** has been elected the **first woman chairman** of **Indian Banks'Association** (IBA). Anantha subramanian started her career in banking in **February 1982**, when she joined the Bank of Baroda as a specialist officer in its planning stream.

95. (D) The term cell nucleus was used by **Robert Brown** for the **first time in 1831** in a paper to the **Linnean Society** and it was published in **1833**.

97. (D) **The Jungle Book (1894)** is a collection of stories by the English author **Rudyard Kipling**. Most of the characters are animals such as **Shere Khan the tiger** and **Baloo the bear**, though a principal character is the **boy or "man-cub" Mowgli,** who is raised in the jungle by wolves.

100. (A) **Punjab Government** has launched a scheme named **Mahatma Gandhi Sarbat Vikas Yojna (MGSVY)** scheme to the welfare of the downtrodden citizen across the state. **The purpose of the programme** is to give the distressed sections of the society the help they need socially, economically and psychologically.

101. (B)



$$R_{1e} = \frac{1200 \times 600}{1800} = 400$$

$$I_e = \frac{5}{400}$$

$$R = \frac{30 \times 400}{5} = 2.4\ k\Omega$$

102. (C) $P_i = \frac{1}{2} LI^2 = 1000\,J$

$$P_c = I^2R = 2000\,W$$

$$\tau = \frac{L}{R} = \frac{2P_i}{P_c} = \frac{1 \times 1000}{2000} = 1.0$$

104. (D) Given circuit satisfiy the resonance condition

$$X_L = X_C$$

$$Q = \frac{X_L}{R} = \frac{20}{10} = 2$$

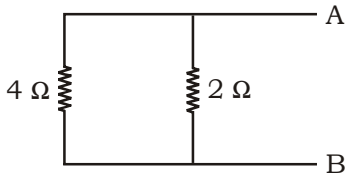
Magnitude of voltage across the induction at resonance

$$V_L = QV_s$$

$$= 2 \times 100 = 200\,V$$

In inductor voltage is leading with respect to the current angle 90°.

105. (B) Equivalent circuit of question



$$R_{AB} = \frac{4 \times 2}{4 + 2} = \frac{4}{3}$$

106. (A) $P = VI\cos\phi$

$= 1000 \times 5 \times 0.2$

$P_i = 1000\,W$

107. (C) $x = \frac{P_i}{P_{Lu}}$

$$= \sqrt{\frac{900}{1600}} = \frac{3}{4}$$

$$\%\,x = \frac{3}{4} \times 100 = 75\%$$

108. (B) At maxium efficiency

$P_{in} = P_i$ ...(i)

Copper loss at half full load

$$P_{in\,new} = \left(\frac{1}{2}\right)^2 \times 1000 = 250\,watt$$

109. (B) In parallel operation of transformer load sharing is inversly proportional to the impedance so–

$$\frac{T_1}{T_2} = \frac{Z_2}{Z_1} = \frac{.05 + J0.2}{0.1 + J0.4} = \frac{1}{2}$$

$T_1 : T_2 = 1 : 2$

110. (C) Voltage regulation of transformer at full-load unity power factor is equal to the % resistive drop.

$\%V_R = \%R\cos\phi + \%X\sin\phi$

113. (C) $N_s = \frac{120f}{p} = \frac{120 \times 50}{4}$

$N_s = 1500$

$$S = \frac{N_s - N_r}{N_s} = \frac{1500 - 1425}{1500} - 0.05$$

$f_r = sf_s = 0.05 \times 50 = 2.5\,Hz$

122. (D) $E_g = Vt + I_aR_a$ $\quad V_t = I_{sh}\,R_{sh}$

$= 250 + 200 \times 0.02$ $\quad \frac{250}{50} = I_{sh} = 5\,A$

$E_g = 254\,V$ $\quad I_a = I_L + I_{sh}$

$= 195 + 5$

$I_a = 200\,A$

126. (A) $N \propto \frac{E}{f}$

$P \propto N$ $\quad T \times \omega \rightarrow$ Constant

$T \rightarrow$ Constant

$\phi I \rightarrow$ Constant

$\phi \xrightarrow{1} \frac{\phi}{2}, I \rightarrow 2I$

131. (A) $M = K\sqrt{L_1L_2}$

$= 0.9\sqrt{0.2 \times 0.2}$

$= 0.9 \times 0.2$

$= 0.18$ H

132. (A) $L_{eq} = L_1 + L_2 - 2m$

$= 2 + 4 - 0.3$

$= 5.7$ mH

133. (A) $V_S^2 = V_R^2 + V_L^2$

$V_L^2 = 240 \times 240 - 100 \times 100$

$= 57600 - 10000$

$V_L = \sqrt{47600} = 218.17\ V$

$I = \frac{300}{100} = 3\ A$

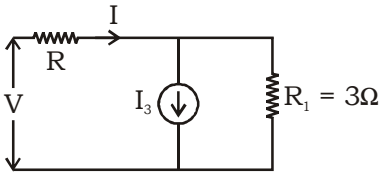
$X_L = \frac{V}{I} = \frac{218.17}{3} = 72.72 = X_C$

$X_C = 72.72$

$C = \frac{1}{72.72 \times 314}$

$= 43.7\ \mu F$

134. (C)



$V = I\,R + \frac{2}{3} I\,R_1$

$\frac{V}{I} = R + 2$

$R_{eq} = 2 + R$

135. (B) $L_{eq} = 2L + 2m = 12$ ...(i)

$2L - 2m = 4$ ...(ii)

$L + m = 6$

$L - m = 4$

$L = 5$ mH

$m = 1$ mH

$L_{eq} = \frac{L_1L_2 - m^2}{L_1 + L_2 - 2m} = \frac{5 \times 5 - 1^2}{5 + 5 - 2}$

$= \frac{24}{8} = 3\ mH$

142. (C) $V_{eq} = 5 \times 1.5 = 7.5$ Volt

$R_a = \frac{(0.2 \times 5)}{4} = 0.25 + 1.25$

$= 1.5\ \Omega$

$I = \frac{7.5}{1.5}$

$= 5$ A

144. (A) $P = V\,I \cos\phi$

$= 10 \times 2 \cos 30^\circ$

$= 17.32$ W

$Q = V\,I \sin\phi$

$= 10 \times 2 \sin 30^\circ$

$= 10$ VAr

145. (B) $V_R = 15\left(\sqrt{\frac{10}{5}}\right)V$

$V_S = 50$ V

$\cos\phi = \frac{V_R}{V_S} = \frac{15(2)^{1/2}}{50}$

$\cos\phi = 0.424$

146. (A) $P_{eq} = \sqrt{P_1^2 \pm P_2^2}$

$= \sqrt{4^2 \pm 4^2}$

$= 0,\ 16$ W

148. (D) $3 = \frac{6R}{6 + R}$

$18 + 3R = 6R$

$3R = 18$

$R = 6\ \Omega$

150. (C) String efficiency $= \frac{100}{4 \times 33.33} \times 100$

$= 75\%$

155. (C) $R_{eq} = \frac{(50 \times 50) \pm (1\% + 2\%)}{(50 + 50) \pm \left(50 \times \frac{1}{100} + 50 \times \frac{2}{100}\right)}$

$= \frac{2500 \pm 3\%}{100 \pm 1.5} = \frac{2500 \pm 3\%}{100 \pm 1.5\%}$

$= 25 \pm 4.5\%$

156. (B) True Revolution $= \frac{520 \times 11.5}{3600} \times 37$

$= 61.4611$ revolution in 37 sec

Measured revolution = 61 revolution in 37 sec

% error $= \frac{61.4611 - 61}{61.4611}$

$= 0.76\%$

163. (C) Illumination $= \frac{\text{Candle power}}{(\text{Distance})^2}$

Candle power $= 6 \times (5)^2$

$= 150$ lux-m^2

175. (C) Load factor $= \frac{\text{P(avg demand)}}{\text{P(max demand)}}$

$$= \frac{57200/30\times 24}{436}\times 100$$

= 18.22%

177. (B) $X_L = X_C$

So, Only Resistance is acting

Then current in circuit is $= \frac{100}{10}$

= 10 A

184. (B) $PSM = \frac{\text{fault current}}{\text{Relay current setting} \times \text{CT ration}}$

$$= \frac{3000}{5\times 0.5\times \frac{400}{5}} = 15$$

191.(C) Illumination $= \frac{C.P}{r^2}\cos\theta$

$$r^2 == \frac{30}{15} = 2$$

r = 1.414 m

192.(D) Iuminous form emitted below the horizontal.

F = 2π I

= 2π × 750

= 1500π lumen

196.(D) $n = x^2 + 3x + 1$

= 9 + 9 + 1

= 19

198.(B)

$$P_{avg} = \frac{1500\times 12 + 1000\times 12}{24} = \frac{2500}{24} = 1250KW$$

P_m = 1500

$$L_f = \frac{P_{avg}}{P_m}$$

$$L_f = \frac{1250}{1500} = 0.833$$

199.(C) at initiatly

X – 1pu

V – 1pu

I – 1pu

and at fault point I_f = 8 pu

So X = $\frac{1}{8}pu = 0.125\ pu$

and after adding the reactance fault current is = 5pu

So Total reactance is = 0.2 pu

Then adding reatance is

= (0.2 – 0.125)

= 0.075 pu