Answer-key & Solution

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

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*

1

SOLUTION SSC JE (Electrical) MOCK TEST no. 78

1. (D) According to the alphabetical order,
M = 13 and N = 14
So, M × N = 13 × 14
In the same way, F = 6 and R = 18
Hence, F × R = 6 × 18

2. (B) As, 9 × 5 = 45
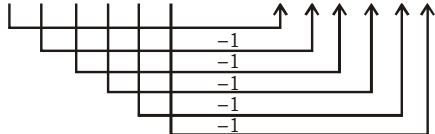and 9 × 4 = 36
Similarly, 9 × 7 = 63
and 9 × 6 = 54
OR
45 : 36   63 : 54
        −9   −9

3. (C) Knowledge is acquired through study.
Similarly, experience is acquired through work.
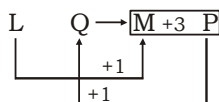
4. (C) As, M U M B A I ⟶ L T L A Z H
(with −1 shifts)

Similarly,

D E L H I ⟶ C D K G H
(with −1 shifts)

5. (A) O   T ⟶ P +3 S
   +1
   +1

In the same way,

L   Q ⟶ M +3 P
   +1
   +1
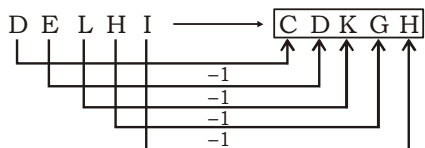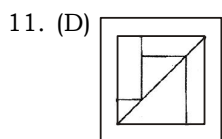
6. (D) Except animals others are non-locomotive.

7. (A) **55 × 5 = 275**, 15 × 15 = 225
5 × 45 = 225, 25 × 9 = 225

8. (C) Except option (C), rest are the ancient names of India wheares Ajimabad is the ancient name of Patna.

9. (A) All other groups of letters except option (A) have (+2) series gap in each of them.

10. (A) The code contains the letters of the word in the order-third, fourth, second, fifth, first and sixth.

11. (D)

12. (A) The series formed with the group of four letters is.
a b c d/ a b c d/ a b c d/ a b c d

13. (B)

14. (B) Clearly, number of boys in the row
= (6 + 10 + 8) = 24

15. (A) At 1 o'clock, the hour hand is at 1 and the minute hand is at 12.
Thus, they are 5 min spaces apart.
To be together, the minute hand must gain 5 min over the hour hand.
55 min. are gained by minute hand in 60 min.

5 min will be gained by it in $\left(\dfrac{60}{55}\times 5\right)$

min = $\dfrac{60}{11}$ min = $5\dfrac{5}{11}$ min

Hence, the hands will coincide at $5\dfrac{5}{11}$ min past 1.

16. (B) 12 ÷ 2 + 9 − 4 = ?
6 + 9 − 4 = ?
15 − 4 = ?
∴ ? = 11

17. (C) A simple multiplication series where a number is 3 times its predecessor.

18. (C) The letters decreases by 1 and the numbers are multiplied by 2.

19. (D) Here, it is mentioned that morning walks improves health. but this does not mean that all healthy people go for morning walks. So, I does not follow. Also, nothing is mentioned about evening walks in the statement. So, II also does not follow.

20. (C) The sequence in first column is multiplied by 5.
Thus, 1 × 5 = 5, 5 × 5 = 25,
25 × 5 = 125
The sequence in third column is multiplied by 2.
Thus, 7 × 2 = 14, 14 × 2 = 28,
28 × 2 = 56
The sequence in second column is multiplied by 4.
∴ Missing number = 12 × 4 = 48

21. (C) In the first column,
29 − 8 = 7 × 3 = 21
In the second column,
19 − 7 = 4 × 3 = 12
Let the missing number in the third column be x.
Then, 31 − 6 = 5 × x or 5x = 25 or x = 5

22. (B)

23. (A)
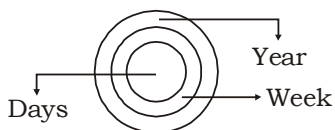
24. (B) Number of days from March 6, 1993 to August 15, 1993.

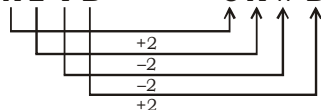March — April — May — June — July — August

= 25 + 30 + 31 + 30 + 31 + 15

= 162 days = 23 weeks + 1 day

Clearly, the day on March 6, will be the same as on August 14 i.e., Thursday.
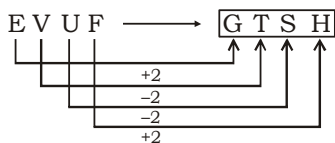
25. (C)

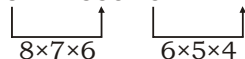26. (C) Stethoscope is an instrument used by doctor, Similarly, chisel is used by sculptor.

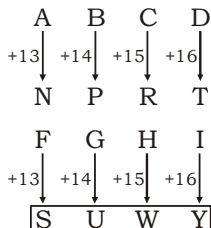27. (A) As, A Z Y B $\longrightarrow$ C X W D

Similarly,

E V U F $\longrightarrow$ G T S H

28. (A) 8 : 336 6 : 120

8×7×6   6×5×4

29. (D) A surgeon uses forceps, similarly, a blacksmith uses hammer.
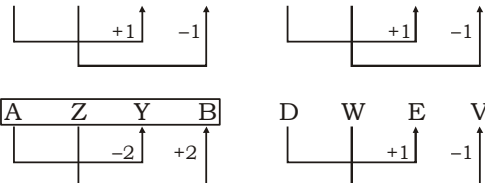
30. (D)

31. (D) Except 379, the sum of the digits in rest of the options is 13.

32. (D) 195   13 225   15 270   18 **196   14**

×15   ×15   ×15   **×14**

33. (C)

34. (C) Only Renounce has different meaning whereas the other three words have similar meanings.

35. (C) Whiter, Worked, Worst, Wound, Writer

36. (C) Due to letter A, the word CAUTION cannot be formed using the letters of original word.

37. (A) Arrival, Introduction, Presentation, Discussion, Recommendation.

38. (A) $2 \times 5 = 10$, $10 \times 3 = 30$, $30 - 2 = 28$

$4 \times 5 = 20$, $20 \times 3 = 60$, $60 - 2 = 58$

39. (A) The correct sequence is 5^2, 7^2, 9^2, 11^2, 13^2 and 15^2. So, 36 is wrong.

40. (B) Total number of digits

= (Number of digits in 1–digit page nos. + Number of digits in 2–digit page nos. + Number of digits in 3–digit page nos.)

= $(1 \times 9 + 2 \times 90 + 3 \times 267)$

= $(9 + 180 + 801) = 990$

41. (C) $A = 1 \Rightarrow 1^3 + 1^2 + 1 = 3$

$B = 2 \Rightarrow 2^3 + 2^2 + 2 = 14$

$C = 3 \Rightarrow 3^3 + 3^2 + 3 = 39$

$D = 4 \Rightarrow 4^3 + 4^2 + 4 = 84$

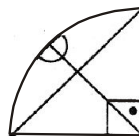$\therefore G = 7 \Rightarrow 7^3 + 7^2 + 7 = \mathbf{399}$

42. (B)

B	C	E	H	L	**Q**
2	3	5	8	12	17

43. (C)

18	100	294	648	1210
↓	↓	↓	↓	↓
$3^3 - 3^2$	$5^3 - 5^2$	$7^3 - 7^2$	$9^3 - 9^2$	$11^3 - 11^2$

27	125	343	729	1331
–9	–25	–49	–81	–121
18	100	294	648	1210

44. (C) $7 \times 6 + 6 \times 4 + 4 \times 7 = 42 + 24 + 28 = 94$

$5 \times 3 + 3 \times 2 + 5 \times 2 = 15 + 6 + 10 = 31$

$8 \times 5 + 5 \times 3 + 3 \times 8 = 40 + 15 + 24 = \mathbf{79}$

45. (B)

46. (B)

47. (D) $4 \times 3 \times 5 \times 2 = 120 \Rightarrow \dfrac{120}{2} = 60$

$5 \times 6 \times 2 \times 3 = 180 \Rightarrow \dfrac{180}{2} = 90$

$5 \times 2 \times 3 \times 9 = 270 \Rightarrow \dfrac{270}{2} = \mathbf{135}$

48. (C) $13 + 3 - 2 + 1 = 15$ or $17 - 2 = 15$

49. (C)

Hence, 'O' is opposite to 'Δ'.

50. (B) Let son's age be x yr.
Then, father's age = $(3x)$ yr
Five years ago, father's age = $(3x - 5)$ yr
and son's age = $(x - 5)$ yr
So, $3x - 5 = 4(x - 5)$
$\Rightarrow 3x - 5 = 4x - 20$
$\Rightarrow x = 15$ yr
$\therefore$ Son's age = 15 yrs

51. (B) K.S. Hegde served as a member of the Rajya Sabha from 1952 to 1957, holding office as its vice chairman between 1952 and 1953. He served as Judge of the Supreme Court of India between 1967 and 1973 and as Speaker of the 6th Lok Sabha. K.S. Hegde and Baharul Islam are the only Supreme Court judges to have served in the Parliament of India prior to their appointment to the judiciary.

55. (C) More than simply putting flowers in a container, ikebana is a disciplined art form in which nature and humanity are brought together. Contrary to the idea of floral arrangement as a collection of partly- colored or multicolored arrangement of blooms, ikebana often emphasizes other areas of the plant such as its stems and leaves and draws emphasis toward shape, line form.

60. (B) Ravi Shankar, colloquially known as Sri Sri Ravi Shankar is a spiritual leader and founder of the Art of Living Foundation (founded 1982), which aims to relieve individual stress, societal problems and violence. It is and NGO with UNESCO consultative status. In 1997 he established a Geneva-based charity, the International Association for Human Values, and NGO that engages in relief work and rural development and aims to foster shared global values.

62. (D) Most pencil cores are made of graphite mixed with a clay binder, leaving grey or black marks that can be easily erased. Graphite pencils are used for both writing and drawing and the result is durable. Although writing can usually be removed with an eraser, it is resistant to moisture, most chemicals ultraviolet radiation and natural aging.

65. (D) Silviculture is the practice of controlling the establishment, growth, composition, health and quality of forests to meet diverse needs and values. The name comes from the Latin silvi-(forest) + culture (as in growing). The study of forests and woods is termed silvology. Forest regeneration is the act of renewing tree cover by establishing young trees naturally or artificially, generally promptly after the previous stand or forest has been removed.

66. (A) National emergency is caused by war, external aggression or armed rebellion in the whole of India or a part of its territory. The President can declare such an emergency only on the basis of a written request by the Council of Ministers headed by the Prime Minister. Such a proclamation must be approved by the Parliament within one month. Such an emergency can be imposed for six months. It can be extended by six months by repeated parliamentary approval.

67. (D) The speaker is elected in the very first meeting of the Lok Sabha after the general elections for a term of 5 years from amongst the members of the Lok Sabha. He/She is supposed to resign From his/her original party because as a speaker, he/she to remain impartial.

68. (A) Kadambari is a romantic novel in Sanskrit. It was substantially composed by Banabhatta in the first half of the 7th century, who did not survive to see it through completion. The novel was completed by Banabhatta's son Bhushanabhatta, according to the plan laid out by his late father. It is conventionally divided into Purvabhaga (earlier part) written by Banabhatta and Uttarabhaga (letter part) by Bhushanabhatta.

69. (C) Social overheads capital is the capital spent on social infrastructure, such as schools, universities, hospitals, libraries. They are capital goods of types which are available to anybody, hence social and they are not tightly linked to any particular part of production, hence overhead. Because of their broad availability they often have to be provided by the government. Examples of social overhead capital include roads, schools, hospitals and public parks.

70. (B) This is inertia of direction. It is the ability of body to be in a state of direction of motion, for example sun holds planets in a fixed elliptical path this is one of the examples of inertia of direction. Inertia of direction is non-existent, however inertia only apply to a body at rest or moving with a constant velocity. It is the property possessed by a body to resist change. In other way we can say that if a body moves in a particular direction under the action of a force and if the force is removed then they will continue to move in the same direction unless stopped under the action of another opposing force for a body at rest and under the inertia of rest whereas inertia of motion is for bodies in motion.

72. (C) In C language the formatting character should be preceded by the symbol %.

74. (B) 'The Story of My Experiments with Truth An Autobiography' brings out that all of his life, experiments with food were to be part of Gandhi's experiments with truth. While in England, where food is sometimes tasteless anyway, he decided he could do without condiments, for "The real seat of taste is not the tongue but the mind."

76. (D) According to the Constitution of India, the role of the Supreme Court is that of a federal court and guardian of the Constitution. The Federal Court of India was a judicial body, established in India in 1937 under the provisions of the Government of India Act 1935, with original, appellate and advisory jurisdiction. It functioned until 1950, when the Supreme Court of India was established.

79. (D) It is just because woolen clothes have fibres and between those fibres air is trapped which reduces heat loss. Air reduces heat loss because it is an insulator i.e. poor conductor of heat. Hence, all the heat from our body gets trapped inside the clothes which makes us feels warmer with the clothes.

80. (C) Hashish, often known as "hash" is a cannabis preparation composed of compressed and/or purified preparations of stalked resin glands called trichomes, collected from the unfertilized buds of the cannabis plant. Hashish is made from cannabinoid-rich glandular hairs known as trichomes, as well as varying amounts of cannabis flower and leaf fragments. The flowers of a mature female plant contain the most trichomes, though trichomes are found on other parts of the plant. Certain strains of cannabis are cultivated specifically for their ability to produce large amounts of trichomes.

81. (C) Saliva: It is secreted by the salivary glands, Sweat achieved by the water-rich secretion of the eccrine glands. Epinephrine: It is also known as adrenaline is a hormone and a neurotransmitter.
Bile: It is a bitter-tasting dark green to yellowish brown fluid produced by the liver that aids the process of digestion of lipids in the small intestine.
Bile is the odd one among all four as it is secreted by liver, while others are secreted by glands.

87. (D) Powers and duties of the Attorney General of India is given in Article 76 of the Indian Constitution which mentions that in the performance of his duties the Attorney-General shall have right of audience in all courts in the territory of India. The Attorney General appears on behalf of Government of India in all cases (including suits, appeals and other proceedings) in the Supreme Court in which Government of India is concerned. He/she also represents the Government of India in any reference made by the President to the Supreme Court under Article 143 of the Constitution.

89. (D) The Mettur Dam is one of the largest dams in India built in 1934. It was constructed in a gorge, where the Kaveri River enters the plains in Tamil Nadu. The dam is one of the oldest in India. It provides irrigation facilities to parts of Salem, the length of Erode, Namakkal, Karur, Tiruchirapalli and Thanjavur district for 271,000 acres of farm land. The total length of the dam is 1,700 m. The dam creates Stanley Reservoir.

91. (A) Distillation or desalinization refers to any of several processes that remove some amount of salt and other minerals from saline water. One potential by product of desalination is salt. Desalination is used on many seagoing ships and submarines. Most of the modern interest in desalination is focused on developing cost-effective ways of providing fresh water for human use. Along with recycled waste water, this is one of the few rainfall independent water sources.

92. (D) The NSE's key index is the S&P CNX Nifty, known as the NSE NIFTY (National Stock Exchange Fifty), an index of fifty major stocks weighted by market capitalization. Nifty Fifty was an informal term used to refer to 50 popular large cap stocks on the New York Stock Exchange in the 1960s and 1970s that were widely regarded as solid buy and hold growth stocks. NIFTY means National Index for Fifty.

93. (C) The List of 17 Navratna PSEs are as follows
   1. Bharat Electronics Limited
   2. Bharat Petroleum Corporation Limited
   3. Container Corporation of India Limited
   4. Engineers India Limited
   5. Hindustan Aeronautics Limited
   6. Hindustan Petroleum Corporation Limited

7.   Mahanagar Telephone Nigam Limited
8.   National Aluminium Company Limited
9.   National Buildings Construction Corporation Limited
10. NMDC Limited
11. Neyveli Lignite Corporation Limited
12. Oil India Limited
13. Power Finance Corporation Limited
14. Power Grid Corporation of India Limited
15. Rashtriya Ispat Nigam Limited
16. Rural Electrification Corporation Limited
17. Shipping Corporation of India Limited

94.   (C) The tropical and subtropical dry broadleaf forest biome also known as tropical forest is located at tropical and subtropical latitudes. Deciduous trees predominate in most of these forests and during the drought a leafless period occurs, which varies with species type. Teak and Sal, along with mango, bamboo and rosewood, belong to the moist deciduous forests which shed their leaves in the dry season.

95.   (D) The Brihadeshwara Temple at Thanjavur (Tanjore) in the Indian state of Tamil Nadu, is a Hindu temple dedicated to Shiva and a brilliant example of the major heights achieved by Cholas in Tamil architecture. It is a tribute and a reflection of the power of its patron Raja Raja Chola I. It remains India's largest temple and is one of the greatest glories of Indian architecture. The temple is part of the UNESCO World Heritage Site "Great Living Chola Temples".

96.   (A) The Third Buddhist Council was convened in about 250 BCE at Ashokarama in Pataliputra, supposedly under the patronage of Emperor Ashoka. The traditional reason for convening the Third Buddhist Council is reported to have been to rid the Sangha of corruption and bogus monks who held heretical views. It was presided over by the Elder Moggaliputta Tissa and one thousand monks participated in the Council.

97.   (D) Most Tsunami are caused by earthquakes generated in a subduction zone, an area where an oceanic plate is being forced down into the mantle by plate tectonic forces. The friction between the subducting plate and the overriding plate is enormous.

98.   (D) Started in 1952, the Integral Coach Factory (ICF) is located in Perambur, a suburb of Chennai, India. Its primary products are rail coaches. Most of the manufactured coaches are supplied to the Indian Railways, but it has also manufactured coaches for railway companies in other countries, including Thailand, Burma, Taiwan, Zambia, Philippines, Tanzania, Uganda, Vietnam, Nigeria, Mozambique and Bangladesh. Recently, ICF exported coaches also to Angola.

99.   (B) Nickel silver, also known as German silver, Argentan, new silver, nickel brass, albata, alpacca, or electrum, is a copper alloy with nickel and often zinc. The usual formulation is 60% copper, 20% nickel and 20% zinc. Nickel silver is named for its silvery appearance, but it contains no elemental silver unless plated. The name "German silver" refers to its development by 19th century German metal workers in imitation of the Chinese alloy known as paktong, Nickel silver first became popular as a base metal for silver plated cutlery and other silverware, notably the electroplated wares called EPNS (electroplated nickel silver). It is used in zippers, better quality keys, costume jewellery, for making musical instruments (example: cymbals, saxophones) and it is preferred for the track in electrically powered model railway layouts, as its oxide is conductive. It is widely used in the production of coins.

100. (B) Those were the words of Shivaswami Iyer who was a prominent lawyer, administrator and statesman who served as the Advocate General of Madras from 1907 to 1911. He was the Indian delegate to the third session of the League of Nations in 1922 in which, he condemned the mandate policy of General Smuts of the Republic of South Africa. Shivaswami Iyer served as a member of the Council of State from 1922 to 1923. He also opposed the Simon Commission on its arrival in India.

101. (A) The circuit is as shown in figure below
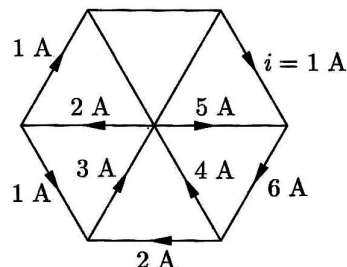
Hence (A) is correct option.

102. (A) Going from 10 V to 0 V
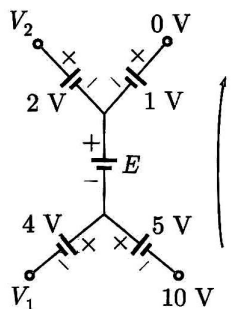
10 + 5 + E + 1 = 0 or E = – 16 V

Hence (A) is correct option.

103. (B) Voltage is constant because of 15 V source.

Hence (B) is correct option.

104. (C) Voltage at previous circuit will remain same. So i will remain constant.

Hence (C) is correct option.

105. (A) Let v_o be the voltage across dependent source

$$\frac{v_o - 20}{5} + \frac{v_o}{5} = \frac{20}{5}$$

$$\Rightarrow \quad v_o = 20 \text{ V}$$

Power is $P = v_o \times \dfrac{v_1}{5} = 20 \times \dfrac{20}{5} = 80 \ W$

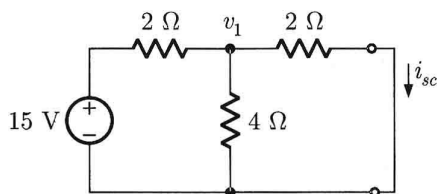Hence (A) is correct option.

106. (A) $200 i_1 + 50 (i_1 + 10m) + 100 (i_1 - 40m) = 0$

$$350 i_1 + 0.5 - 4 = 0 \Rightarrow i_1 = \frac{3.5}{350} = 10 \ mA$$

Hence (A) is correct option.

107. (A) The circuit is as shown below

$R_N = 2 \parallel 4 + 2 = \dfrac{10}{3} \ \Omega$,

$$v_1 = \frac{\dfrac{15}{2}}{\dfrac{1}{2} + \dfrac{1}{2} + \dfrac{1}{4}} = 6 \ V$$

$i_{sc} = i_N = \dfrac{v_i}{2} = 3 \ A$

Hence (A) is correct option.

108. (B) $v_s = 4 \times \dfrac{3i}{4} \Rightarrow \dfrac{v_s}{i} = 3 \ \Omega$

Hence (B) is correct option.

109. (C) $L_{eq} = \dfrac{L_1 L_2 - M^2}{L_1 + L_2 - 2M} = \dfrac{24 - 16}{6 + 4 - 8} = 4 \ H$

Hence (C) is correct option.

110. (B) $Q = R\sqrt{\dfrac{C}{L}} = 8 \times 10^3 \sqrt{\dfrac{0.25 \times 10^{-6}}{40 \times 10^{-3}}} = 20$

Hence (B) is correct option.

111. (A) $\qquad BW = \dfrac{R}{L}$

$$\Rightarrow \quad \frac{R}{1 \times 10^{-3}} = 15.9 \times 2\pi = 0.1 \ \Omega$$

Hence (A) is correct option.

112. (C) In two-wattmeter methods

$$\tan\phi = \sqrt{3}\left(\frac{P_1 - P_2}{P_1 + P_2}\right)$$

$P_1 = 8 \ kW, \ P_2 = 4 \ kW$

So $\tan\phi = \sqrt{3}\dfrac{(8-4)}{(8+4)} = \sqrt{3}\left(\dfrac{4}{12}\right) = \dfrac{1}{\sqrt{3}} \Rightarrow \phi = 30°$

Power factor $\quad \cos\phi = \cos 30° = 0.866$

Hence (C) is correct option.

113. (C) Inductance of the Solenoid is given as

$$L = \frac{\mu_0 N^2 A}{l}$$

Where A $\rightarrow$ are of Solenoid

$l \rightarrow$ length

$$L = \frac{4\pi \times 10^{-7} \times (3000)^2 \times \pi \ (30 \times 10^{-3})^2}{(1000 \times 10^{-3})}$$

$= 31.94 \times 10^{-3}$ H $\simeq$ 32 mH

Hence (C) is correct option.

114. (C) The reflected impedance when referred to the primary side will be

$$Z_s = \left(\frac{N_1}{N_2}\right)^2 (Z_s') = (5)^2 (1 + j4) = 25 + j100 \ \Omega$$

Hence (C) is correct option.

115. (C) Turns ratio $n = \dfrac{1000}{200} = 5$

Effective resistance on the secondary side

$$R_{02} = R_2 + \dfrac{R_1}{a^2} \qquad \begin{cases} R_1 = 0.25 \ \Omega \\ R_2 = 0.014 \ \Omega \end{cases}$$

$$= 0.014 + \dfrac{0.25}{5^2} = 0.024 \ \Omega$$

Since at maximum efficiency, copper loss and iron-loss are equal. We may write

So $\qquad I_2^2 R_{02} = 240$

$\therefore \qquad I_2 = \sqrt{\dfrac{240}{0.024}} = 100 \ A$

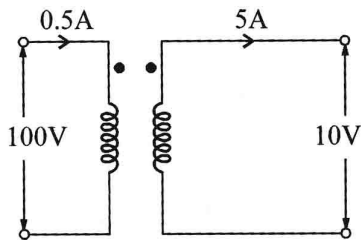Hence (C) is correct option.

141. (D) PSM is given as

$$PSM = \dfrac{\text{Primary fault current}}{I_{PK} \times \text{C.T. ratio}}$$

Iex = % setting of Relay × C.T.
Secondary current,
$\qquad = 0.5 \times 5 = 2.5$

$$PSM = \dfrac{2000}{2.5 \times 80} = 10$$

142. (A)
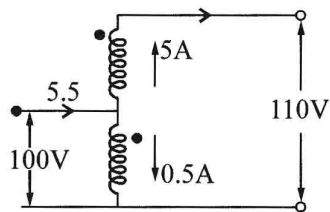

When it is two winding

$I_1 = \dfrac{50}{100} = 0.54$

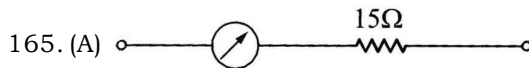$I_2 = \dfrac{50}{10} = 5A$

When Re-Connected as auto transformer,

Rating of auto transformer would be
$\qquad = 110 \times 5$
Or, $\quad 100 \times 5.5 = 550$ VA

159. (A) Demand factor

$$D.F. = \dfrac{P_{max}}{\text{Sum of connected load}}$$
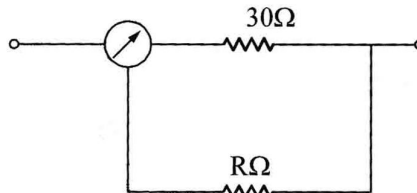
$$= \dfrac{1.5}{2} = \dfrac{3}{4} = 0.75$$

165. (A)

In first case,
$\qquad 30 \times 30 = 15 \ \Omega$
Now let R is connected across the ammeter.

$\therefore \qquad m = \dfrac{I_{ext}}{I_m}$

$\therefore \qquad m = 2 \Rightarrow I_{ext} \times 2I_m$

(As given in the Question)
$\qquad I_m.R = I_m \times 15$
$\Rightarrow \qquad R = 15 \ \Omega$
R = 15 Ω is required to connected across the ammeter to double its Range.

169. (D) Breaking current

$$I_B = \dfrac{S}{\sqrt{3}.V_2}$$

$$= \dfrac{2000 \times 10^6}{\sqrt{3}.33 \times 10^3} = 34.99 \ KA$$

$I_{making} = 2.55 \times I_B$
$\qquad = 2.55 \times 34.99 = 89.22$ KA

181. (C) Power factor = $\cos \theta$

$$\cos \theta = \cos\left(\tan^{-1} \dfrac{\sqrt{3}(P_1 - P_2)}{(P_1 + P_2)} \right)$$

$\therefore \qquad P_1 = P_2$
$\Rightarrow \qquad \cos \theta = \cos (\tan^{-1} 0°)$
$\Rightarrow \qquad \cos \theta = 1$
i.e., pf is unity.

193. (B) Iron loss is given as
$\qquad P_i = K_e f^2 + K_h f$

$\Rightarrow \qquad \dfrac{P_i}{f} = K_h + K_e f$

It resembles the straight line equation.

194. (A) $\qquad \dfrac{P_i}{f} = K_h + K_e f$

$\qquad K_h = 0.01$
and $\qquad K_e = 0.001$
$\Rightarrow \qquad P_h = K_h f$
$\qquad = 0.01 \times 100 \ 1$ watt
$\qquad Pe = K_e f^2$
$\qquad = 0.001 \times 100^2 = 10$ watt