Answer-key & Solution

SSC JE (Electrical)
MOCK -(87)
Date 25/ 02/ 2017

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

Correction Mock Test 86- (65. 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 (Electrical) MOCK TEST no. 87

1. (C) As Safe and Secure are synonyms of one another, similarly Careful and **Wary** are synonyms.
2. (B) Rupee is the currency of India and **Rand** is the currency of South Africa.
3. (D) $6 \Rightarrow 6^2 + 2 = 38$
   $11 \Rightarrow 11^2 + 2 =$ **123**
4. (C) 9845, 9676, 9555, 9474, **9425**
   $-(13)^2 = -169$, $-(11)^2 = -121$, $-(9)^2 = -81$, $-(7)^2 = -49$
5. (B) 6812, 6816, 6960, 7444, **8468**
   $+2^2 = 4$, $+12^2 = 144$, $+22^2 = 484$, $+32^2 = 1024$
   +10, +10, +10
6. (C)
7. (C) $4 \rightarrow 1 \rightarrow 2 \rightarrow 6 \rightarrow 5 \rightarrow 3$
8. (D) POSI → KUQR, TION → LMGR, PER → **TGR**, SON → **LMQ** (+2 +2 +2 +2)
9. (D)

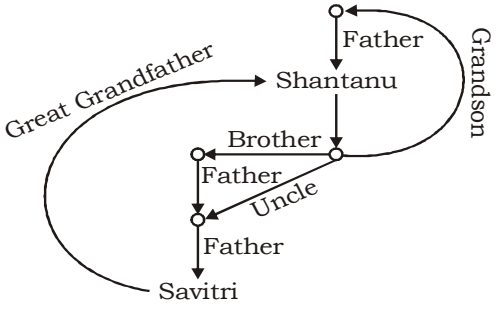
M	U	S	C	L	E
4	**6**	**5**	**1**	**3**	**2**

10. (A) $T = 3 + \left[\frac{2}{11}(3 \times 30 + 0)\right]$

    $= 3 + \frac{180}{11} =$ **3 past $16\frac{4}{11}$ min**

11. (C) As, $\frac{2024}{4} = 0$ as a remainder

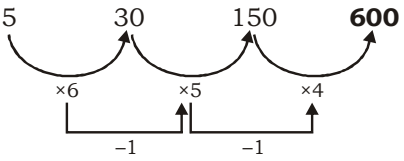
    So, Required year = 2024 + 28 = **2052**
12. (D) We are using **paper** in file, diary and letter.
13. (A) **9612** = 9 + 6 + 1 + 2 = 18
    1097 = 1 + 0 + 9 + 7 = 17
    9413 = 9 + 4 + 1 + 3 = 17
    4742 = 4 + 7 + 4 + 2 = 17
14. (D) Only **Gingelly** is the Kharif crops.
15. (A)

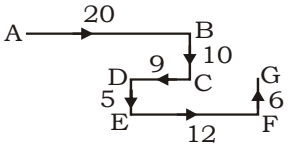


    Shantanu is **Great Grandfather** of Savitri.
16. (B) $13 + 21 + 24 = 58 \Rightarrow 5 \times 8 = 40$
    $21 + 18 + 39 = 78 \Rightarrow 7 \times 8 = 56$
    $23 + 11 + 34 = 68 \Rightarrow 6 \times 8 =$ **48**
17. (B) As,
    $(11^2 + 13^2 + 17^2 + 19^2) - (11 + 13 + 17 + 19)$
    $= 121 + 169 + 289 + 361 - 60 = 880$
    and $(3^2 + 5^2 + 7^2 + 11^2) - (3 + 5 + 7 + 11)$
    $= 9 + 25 + 49 + 21 = 204 - 26 = 178$
    Similarly,
    $(5^2 + 11^2 + 23^2 + 17^2) - (5 + 11 + 23 + 17)$
    $= 25 + 121 + 529 + 289 - 56$
    $= 908$
18. (C) **W** E **B** S I **T** E W **E** B **S** **I** T E
19. (D) From both the dices, we can observe that digit 4 is missing, it means it is at bottom of 3.
20. (D)
21. (D)
22. (C) $\sqrt{64} + \sqrt{36} = 8 + 6 = 14$
    $\sqrt{144} + \sqrt{16} = 12 + 4 = 16$
    $\sqrt{324} + \sqrt{841} = 18 + 29 = 47$
26. (D) As Clock shows the time, similarly Thermometer shows the **Temperature**.
27. (A) A body consist of skeleton and **language** consist of grammar.
28. (C) $9 \times 7 = 63$ and $4 \times 8 =$ **32**
29. (B) All except **Whales** are reptiles.
30. (D) All except **elevation** are synonyms of one another.
31. (C) **TUSV** (2314) is not following the same order as others i.e., RQPS = JIHK = EDCF = 3214 are following.
32. (C) Only son of Amar's Mother's father → Amar maternal Uncle
    So, Girl's maternal uncle is the Amar's maternal uncle. Thus, the Girl's mother is Amar's **Aunt**.
33. (B) $2 \times 4 - 3 = 5$
    $3 \times 4 - 6 = 6$
    $4 \times 5 - 9 = 11$
    $6 \times 2 - 3 =$ **9**
34. (C) $6 \times 8 \times 10 = 480 \Rightarrow \frac{480}{10} = 48$

    $6 \times 5 \times 7 = 120 \Rightarrow \frac{120}{10} = 12$

$9 \times 8 \times 5 = 360 \Rightarrow \frac{360}{10} =$ **36**

35. (C) 

36. (B) 

Now, dog is facing **North**.

37. (D) From dice 1 and dice 4.

Digit (Top)	3	1	2
Digit (Bottom)	5	6	4

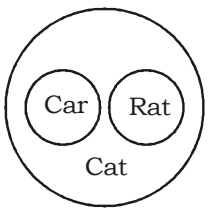
So, when 1 is on the top, 6 at the bottom.

38. (D) The pattern is –4, –9, –16, ... i.e. -2^2, -3^2, -4^2, ...
So, missing pattern = $169 - 5^2 = 169 - 25 =$ **144**.

39. (B) $(2^2 - 1)$, $(4^2 - 1)$, ..., $(8^2 - 1)$, $(10^2 - 1)$, $(12^2 - 1)$
So, missing term = $(6^2 - 1) = (36 - 1) =$ **35**.

40. (A) Ayush's present age = 10 years.
His mother's present age = (10 + 20) = 30 years
Ayush's father's present age = (30 + 5) = 35 years
Ayush's father's age at the time of Ayush's birth = (35 – 10) = 25 years.
Therefore Ayush's father's age at the time of marriage = (25 – 2) = **23 years**

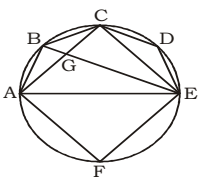
41. (D) Tiger is carnivorous, but Horse is herbivours.

42. (D) 

I. ✖
II. ✖

Neither I nor II follows.

43. (C) $1 \rightarrow 3 \rightarrow 5 \rightarrow 2 \rightarrow 4$

45. (B) 

Simple triangles are ABG, BCG, CGE, CDE, AGE and AEF i.e. 6 in number.
Triangles composed of two components each are ABE, ABC, BCE and ACE i.e. 4 in number.
So, there are 6 + 4 = 10 triangles in the figure.

68. (B) Bromine is your answer as it remains liquid in room temperature. It's boiling point is 58.8° C, thus it stays in liquid form.

73. (D) The Prime Minister is the chief channel of communication between the President and the Council of Minister and keeps the former informed about all the decisions of the council. Article 74 of the Constitution lays down that there shall be a Council of Ministers with Prime Minister at the head to aid and advise the President.

74. (C) Under Section 22 of the Reserve Bank of India Act, the Bank has the sole right to issue bank notes of all denominations. The distribution of one rupee notes and coins and small coins coins all over the country is undertaken by the Reserve Bank as agent of the Government. The system as it exists today is known as the minimum reserve system.

75. (A) Proteins are large biological molecules consisting of one or more chains of amino acids which are essential nutrients for the human body. They are one of the building blocks of body tissue and can also serve as a fuel source. As fuel, proteins contain 4 kcal per gram, just like carbohydrates and unlike liquids, which contain 9 kcal per gram.

76. (D) It is the Moussoleum of Muhammad Adil Shah Sur of Bijapur. This is the second largest dome in the world.

77. (A) Cellulose is a polysaccharide consisting of a linear chain of several hundred/ thousands of D-Glucose molecules. Cotton fiber contain 90% cellulose, wood contain 40-50% cellulose.

79. (A) The Continent Antarctica has the highest mean elevation in the world. This is because it is covered by a thick layer of ice, about 7,100 feet (2,200 m) thick.

81. (A) Best answer is 1, 2 and 3. Because only Inter State Council is a constitutional body under article 263. So option 4 should not be included.

82. (B) King Kobra is the only snake that not only lives in holes but also builds a nest.

83. (B) In Gujarat and Maharashtra the Chief Ministers come under the ambit of Lok

Ayukta Act.

84. (B) According to 73rd Amendment Act 1993, under Article 243D, not less than 1/3rd i.e. 33% seats should be reserved for women in local bodies.
85. (A) An optical fibre is a thin, flexible, transparent fibre that acts as a waveguide or "light pipe" to transmit light between the two ends of the fibre. An optical fibre transmits light along its axis, by the process of total internal reflection. When light traveling in a dense medium hits a boundary at an angle larger than the "critical angle" for the boundary, the light will be completely reflected. This effect is used in optical fibres to confine light in the core.
86. (C) It is a tropical cyclone of north-west Australia. Willy Willy originates in the Timor sea and causes rainfall in different parts of Australia.
87. (B) Arun Goyal, a 1985 batch IAS officer of Union Territory cadre, has been appointed as the Additional Secretary in the Goods and Services Tax (GST) Council. Presently, Goyal is working as Additional Secretary in Project Monitoring Group of Cabinet Secretariat. The GST Council is mandated to decide on tax rate exempted goods and the threshold limit.
88. (D) Non-plan expenditures include non-developmental Expenditure (interest payment, Subsidies, defence expenditure, civil administration), Developmental expenditure and expenditure incurred on projects which remained unfinished in the earlier plans.
90. (C) Velavan Senthilkumar, Indian player from Chennai, has won the Under-19 Asian Junior Individual squash championship title in Kuala Lumpur, Malaysia on September 24th, 2016. He defeated Jordan's Mohammad Al-Sarraj by 12-14, 9-11, 11-6, 11-8, 11-7 to claim the title. With this, he became the 2nd Indian to win the title after Ravi Dixit in 2010.
92. (D) Air bubble in water would act as a diverging lens, because the index of refraction of air is less than that of water.
93. (A) Ergotism is the effect of long term ergot poisoning, due to ingestion of alkaloids produced by fungus Claviceps purpurea which is found in infected cereals and ryes.
94. (C) Vijay Kelkar, the former petroleum secretary, has been elected as the new President of the prestigious Indian Statistical Institute (ISI). He succeeded former RBI governor C Rangarajan. The ISI functions under the Ministry of Statistics and Programme Implementation.
96. (B) Urea is the main nitrogenous excretory product of Ureotelic animals, produced by liver cells from de-aminated excess amino-acids via the urea cycle.
97. (C) Abrasives constitute at least 50% of a typical toothpaste these insoluble particles help remove plaque from teeth, example: Aluminium hydroxide $Al(OH)_3$, Calcium Carbonate $CaCo_3$.
98. (B) Venture capital (VC) is a long term financial Capital provided to early-stage, high-potential, Growth startup companies or new companies.
99. (B) NAFTA : North American Free Trade Agreement

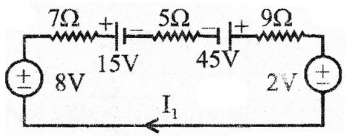
    NATO : North Atlantic Treaty Organisation

    EEC : European Economic Community

    ASEAN : Association of South East Asian Nations.

    NATO is military alliance.

108.(D)

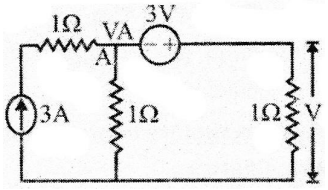


45 – 15 + 8 – 2 = 36 Volt

equivalent Resistance = 7 + 5 + 9 = 21

$$I_1 = \frac{36}{21} = \frac{12}{7} = 1.71A$$

109.(C)

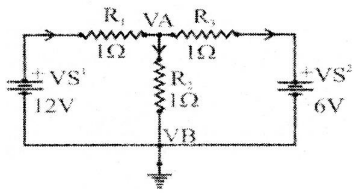


VA = 0 $I = \frac{V_A + 3}{1}$

$$= \frac{0+3}{I} = 3A$$

V = I × 1 = 3 × 1 = 3 volt

111.(B)



Node Analysis

$L_1 + L_3 = I_2$

$$\frac{12 - V_A}{1} + \frac{6 - V_A}{1} = \frac{V_A}{1}$$

$12 - V_A + 6 - V_A = V_A$

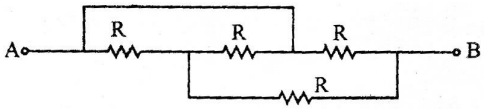
$18 - 2V_A = V_A$

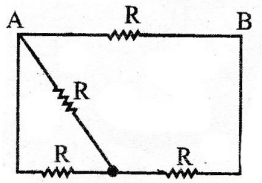
$3V_A = 18$

$$V_A = \frac{18}{3} = 6$$

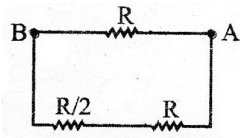
$V_A = 6$ volt

112.(A) point Rule

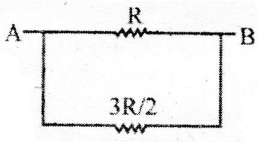




$$\frac{R \times R}{R + R} = \frac{R^2}{2R} = \frac{R}{2}$$



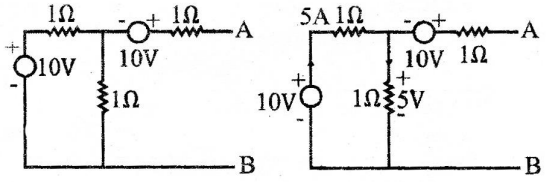
$$\frac{R}{2} + R = \frac{3R}{2}$$



$$\frac{\frac{3R}{2} \times R}{\frac{3R}{2} + R} = \frac{\frac{3R^2}{2}}{\frac{5R}{2}}$$

$$\frac{3R}{2} \times \frac{2}{5R} = \frac{3R}{5} \qquad \Rightarrow \frac{3R}{5}$$

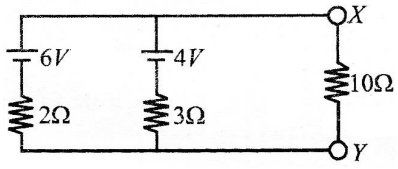
113.(B)



$V_{AB} = 5 + 10 = 15$ Volt

$V_{AB} = 15$ Volt

114.(B)



117.(B) $$P.F = \frac{P.F_1 + P.F_2}{2} = \frac{0.01 + 0.02}{2}$$

$= 0.015$

119.(C) Coil Q

N = 1200

I = 4A

$\phi = 0.08$mWb

$$M = \frac{1200 \times 0.08 \times 10^{-3}}{4}$$

$\because 30\%\, flux$

$$\therefore \frac{0.024 \times 100}{30} = 0.08$$

M = 0.08

120.(B) $\phi = \frac{NI}{5} AT/Wb$

$l = 70 \times 10^{-2}$m

$a = 5 \times 10^{-4}$m^2

$\mu = 4\pi \times 10^{-7} \times 1400$

$$\begin{cases} s = \dfrac{l}{\mu a} \\ \mu = \mu_0 \mu_r \\ \mu_0 = 4\pi \times 10^{-7} \\ \mu_r = 1400 \end{cases}$$

$$S = \frac{l}{\mu a}$$

$$S = \frac{70 \times 10^{-2}}{4\pi \times 10^{-7} \times 1400 \times 5 \times 10^{-4}}$$

$$= \frac{70 \times 10^9}{4 \times 3.14 \times 1400 \times 5} = \frac{1 \times 10^9}{20 \times 20 \times 3.14}$$

$= 796178.34395 = 7.9 \times 10^5$ AT/Wb

123.(C) $L_1 = L_2 = 0.6H$

K = 0.8

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

$$\frac{L_1}{L_2} = \frac{N_1^2}{N_2}$$

$$\frac{N_1}{N_2} = \sqrt{\frac{L_1^2}{L_2^2}} = \sqrt{\frac{0.6}{0.6}} = 1$$

124.(C) l = 12 cm = 0.12m

(N) = 350

$$B = \frac{\phi}{a} = 1.4 Wb/m^2$$

$$\mu_0 = 4\pi \times 10^{-7} H/m$$

(I) = 2A

μ_r = ?

$$\because \phi = \frac{NI}{l/\mu_0 \mu_r a} = \frac{N\mu_0 \mu_r a}{l}$$

$$\frac{\phi}{a} = \frac{NI\mu_0 \mu_r}{l}$$

$$1.4 = \frac{350 \times 2 \times 4\pi \times 10^{-7} \times \mu_r}{\pi \times 0.12}$$

$$\mu_r = \frac{0.12 \times \pi \times 1.4}{350 \times 2 \times 4\pi \times 10^{-7}}$$

μ_r = 600

125.(B) self inductance of coil

$$L = \frac{N^2}{\frac{1}{\mu_a \mu_r} \cdot \frac{l}{A}}$$

$$\Rightarrow L \propto \frac{N^2}{l}$$

$$\Rightarrow \frac{L_1}{L_2} = \left(\frac{N_1}{N_2}\right)^2 \left(\frac{l_2}{l_1}\right)$$

$$\because l_1 = l,\ l_2 = l_1$$

$$\Rightarrow \frac{L_1}{L_2} = \left(\frac{N}{2N}\right)^2 \left(\frac{2l}{l}\right) = \frac{1}{2}$$

$$\Rightarrow L_2 = 2L_1$$

127.(B) I[st] Method

$$V_{average} = \frac{Area\ Under\ One\ revolution}{Base\ Length}$$

$$= \frac{\frac{1}{2} \times Base \times height}{Base\ Length} = \frac{\frac{1}{2} \times 2 \times 200}{2}$$

V_{av} = 100V

130.(B) In a series R-C circuit

V_C = 60 V

V_R = 80 V

Input voltage V_{in} = ?

from the circuit

$$|V_{in}| = \sqrt{V_C^2 + V_R^2}$$

$$\Rightarrow |V_{in}| = \sqrt{(60)^2 + (80)^2} \Rightarrow |V_{in}| = \sqrt{3600 + 6400}$$

$$\tan\theta = \frac{V_C}{V_R} = \frac{60}{80} = \frac{3}{4}$$

$$\theta = \tan^{-1}\left(\frac{3}{4}\right) = +36.86 = 37^\circ C$$

$$V_{in} = |V_{in}| \angle -\theta$$

$$V_{in} = 100 \angle -37^\circ C$$

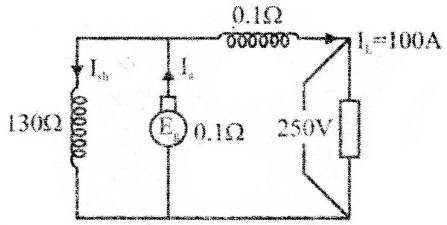
132.(B)Z = 250, N = 1200 r.p.m.

E_a = 200V

$$E_a = \frac{P\phi ZN}{60A} [P = A]$$

$$\phi = \frac{200 \times 60}{250 \times 1200} = 0.04 Wb$$

133.(A)



$E_g = V + I_a . (R_a + R_{se})$ + Brush drop

V = 250 V

I_a = ?

R_a = 0.1Ω

$$I_{sh} = \frac{125}{130} = 1.92 Amp$$

$I_a = I_{sh} + I_L$

= 100 + 1.92 = 101.92 Amp

E_g = 250 + 101.92 (0.1+0.1)+Brush drop

= 250 +101.92×0.2+2

= 250 + 20.384+ 2

= 272.382

E_g = 272.2 approximate

152.(B)

(K_d) = 0.955

(K_C) = 0.966

(f) = 50 Hz

(ϕ) = 25 mwb = 25×10^{-3}wb

Nph = 240

$E_{ph} = 4.44 k_p k_d \phi T$

$= 4.44 \times .966 \times .955 \times 25 \times 10^{-3} \times 50 \times 240$

Eph = 1228.81 volt

153.(D) lagging power factor = 0.6

$V_L I_L \cos\phi = W_1$

W_1 = 300kW

$\cos\phi = 0.6$

$$V_L I_L = \frac{300}{0.6} = 500KVA$$

power factor unity power

$$\left.\begin{aligned} W_2 &= 500 \times \cos\phi \\ W_2 &= 500 \times 1 \\ W_2 &= 500kW \end{aligned}\right\} \cos\phi = 1$$

unity power factor

$W_2 - W_1 = 500 - 300 = 200$kW

P = 200 kW

158.(B) $\Rightarrow T \propto V^2$

$$50\% \rightarrow \frac{50}{100} = 0.5$$

$T \propto V^2 \Rightarrow 0.5 \times 0.5 = 0.25$

Percentage value = 0.25 × 100 = 25%

100 – 25 = 75%

171.(B) $= \frac{1.2 - 0.9}{0.9} \times 60K\Omega$

$$= \frac{0.3}{0.9} \times 60K\Omega = 20K\Omega$$

172.(B) $\text{meter constant} = \frac{\text{No of revolution}}{\text{KWh}}$

$$\frac{230 \times 25 \times \cos\phi}{1000} = \frac{1940}{400}$$

$$\cos\phi = \frac{1940 \times 1000}{230 \times 25 \times 400} = \frac{7760}{23 \times 400} = 0.84$$

$\cos\phi = 0.8$