

*KD*  
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2007, OUTRAM LINES, 1ST FLOOR, NEAR GTB NAGAR METRO STATION, GATE NO. - 2, DELHI-110009

**Answer-key & Solution**

*SSC JE (Electrical)*  
*MOCK -(86)*  
*Date 18/02/2017*

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

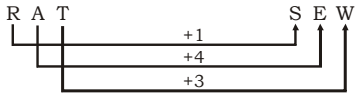
**Note :** *If your opinion differ regarding any answer, please message the mock test and Question number to 9560620353*

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

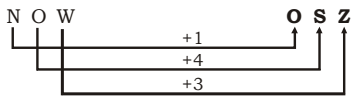
**SOLUTION SSC JE (Electrical) MOCK TEST no. 86**

1. (D) The tadpole is a young one's of frog and frogs are amphibians. The lamb is a young one's of sheep and sheep are mammals.

2. (C) As,



Similarly,



3. (B) To drizzle is to rain slowly and to jog is to run slowly.

4. (A) All except cycle run on fuel.

5. (C) All except Turkey are countries ruled by kings.

6. (D) Except (241), rest are multiple of 3.

7. (A) 
$$\begin{array}{r} 893 \\ -395 \\ \hline 498 \end{array}$$

8. (C)  $\frac{216}{11}$  remainder = 7,  $\frac{216}{16}$  remainder = 8

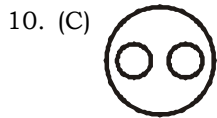
$\frac{216}{21}$  remainder = 6,  $\frac{216}{7}$  remainder = 6

9. (B)  $(8 \times 11) + 12 = 100$

$(6 \times 11) + 14 = 80$

$(5 \times 9) + 15 = 60$

$(12 \times 4) + 22 = 70$



Father and mother are parents but they are two different entity.

11. (D) A \$ B → A is the brother of B

B \* C → B is the son of C

Hence, → A is the son of C

C @ D → C is the wife of D

Hence, → C is the mother of A.

12. (A)  $1^2 + 1 = 2$

$2^2 + 2 = 6$

$6^2 + 6 = 42$

$42^2 + 42 = 1806$

13. (B)  $6 = 2 \times 3$ ,  $15 = 3 \times 5$ ,  $35 = 5 \times 7$ ,  $77 = 7 \times 11$   
 $143 = 11 \times 13$ , **221** =  $13 \times 17$  &  $323 = 17 \times 19$   
 (continuous prime no.'s product)

14. (C)  $3 \rightarrow 2 \rightarrow 4 \rightarrow 1$

15. (C) Let Varun's age today = x years.

Then, Varun's age after 1 year = (x + 1) years.

$\therefore x + 1 = 2(x - 12)$

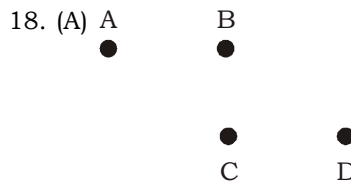
$\Leftrightarrow x + 1 = 2x - 24 \Leftrightarrow x = 25$

Varun's present age = 25 years

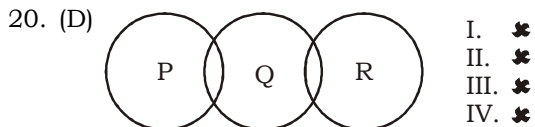
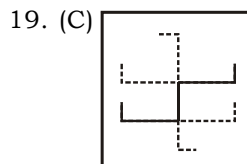
16. (D) We can't find 2 R's and 2 L's in the word SLAVOCRACIES.

17. (A)  $1^2 + 3^2 = 10 \Rightarrow \frac{10}{2} = 5$ ,  $2^2 + 4^2 = 20 \Rightarrow \frac{20}{2} = 10$

$3^2 + 5^2 = 34 \Rightarrow \frac{34}{2} = 17$ ,  $4^2 + 6^2 = 52 \Rightarrow \frac{52}{2} = 26$

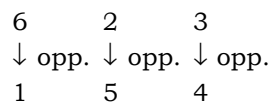


$\therefore$  D's house is in the South-East direction of A.

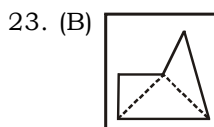


None of the four conclusions follows.

21. (D) From the figures (1) and (3), we have



Hence, 4 is opposite to 3.



26. (D) As, B A B Y  
 $\downarrow +1^2 \downarrow +2^2 \downarrow +3^2 \downarrow +4^2$   
 C E K O

Similarly, B A B A  
 $\downarrow +1^2 \downarrow +2^2 \downarrow +3^2 \downarrow +4^2$   
**C E K Q**

27. (B)  $6 \times 4 = 24 \Rightarrow 2 \times 4 = 8$   
 $2 \times 8 = 16 \Rightarrow 1 \times 6 = \mathbf{6}$

28. (B) As, 2 3 1  
 $\downarrow 2^2 \downarrow 3^2 \downarrow 1^2$   
 4 9 1

Similarly, 3 0 2  
 $\downarrow 2^2 \downarrow 3^2 \downarrow 1^2$   
**9 0 4**

29. (D) A group of letters form a word and a group of words form a sentence.

30. (D) Except (D), others are in form of  $(x^3 - x)$  where  $x = 3, 5, 7$ .

31. (D) In 'YELLOW' we can find two vowels i.e. 'E and O', whereas in others only one vowel is present.

32. (C) Except (C), other are continents.

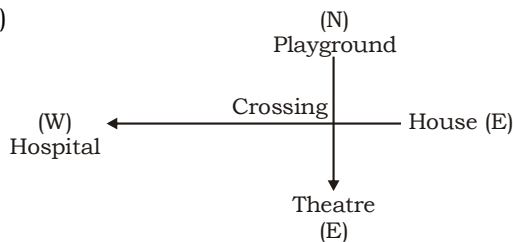
33. (D) Except (D), other are prime numbers.

34. (B) Since each pole at the corner of the plot is common to its two sides, so we have :

Total number of poles needed  
 $= 37 \times 4 - 4 = 148 - 4 = 144$

35. (B) The girl is the daughter of the sister of Sandeep's father. Hence, the girl is the cousin or Sandeep is the cousin of the girl.

36. (A)



37. (B)  $6 \times 0.5 + 1 = 4$

$4 \times 1 + 2 = 6$

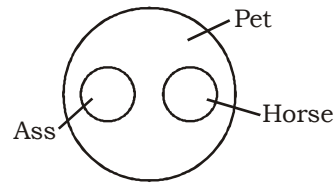
$6 \times 2 + 3 = 15$

$15 \times 4 + 4 = \mathbf{64}$

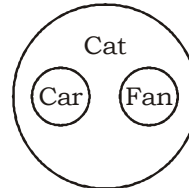
$64 \times 8 + 5 = 517$

$517 \times 16 + 6 = 8278$

38. (D) Ass and Horse are different from each other but both are pet.



39. (D)



Neither I nor II follows.

40. (B)  $2 \rightarrow 4 \rightarrow 1 \rightarrow 5 \rightarrow 3$

41. (A)  $6^2 + \frac{6}{2} = 36 + 3 = 39$

$8^2 + \frac{8}{2} = 64 + 4 = 68$

$12^2 + \frac{12}{2} = 144 + 6 = \mathbf{150}$

$4^2 + \frac{4}{2} = 16 + 2 = 18$

42. (B)  $(4 \times 3 - 2)^2 + (4 + 2 + 3) = 100 + 9 = 109$

$(5 \times 2 - 3)^2 + (5 + 3 + 2) = 49 + 10 = 59$

$(8 \times 2 - 4)^2 + (8 + 4 + 2) = 144 + 14 = 158$

$(6 \times 3 - 5)^2 + (6 + 5 + 3) = 169 + 14 = \mathbf{183}$

43. (C) LCM (24, 36, 48) = 144

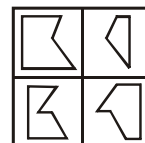
LCM (16, 24, 36) = 144

LCM (18, 16, 32) = **288**

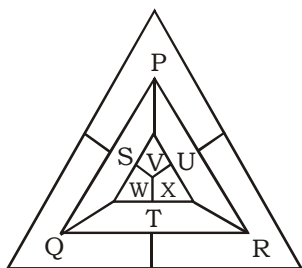
45. (D) The two half-shaded faces lie opposite to each other and one of the three blank faces appears opposite to the face bearing a dot. Clearly, each one of the four cubes shown in figures (A), (B), (C) and (D) can be formed by folding the sheet shown in figure.

46. (D) M S D O M G B A N J O  
 $\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$   
 $\frac{\times}{2} \frac{\times}{2} \frac{\times}{2} \frac{\times}{2} \frac{\times}{2} \frac{\times}{2} \frac{\times}{2} \frac{\times}{2} \frac{\times}{2} \frac{\times}{2}$   
 13 19 4 15 13 7 2 1 14 10 15  
 26 38 08 30 26 14 **04 02 28 20 30**

48. (D)



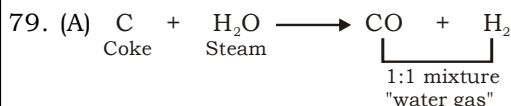
50. (D) The figure may be labelled as shown.



Now, in order that no two adjacent spaces be shaded by the same colour, the spaces T, U and S must be shaded with the colours of the spaces P, Q and R respectively.

Also the spaces X, V and W must be shaded with the colours of the spaces S, T and U respectively i.e. with the colours of the spaces R, P and Q respectively. Thus, minimum three colours are required.

77. (B) The Odisha government in association with International Labour Organisation (ILO) will host the 2016 National conference on labour in Bhubaneswar from September 20<sup>th</sup>. The focus of a 2-day conference is to discuss several issues related to organized and unorganized labourers in India.



81. (C)  $A^-$  = anion  
 $A^+$  = cation  
 A = Parent atom  
 Size : anion > parent atom > cation  
 $A^- > A > A^+$

82. (B) Twisting the yoke will tilt the picture. A projection colour television uses three picture tubes and yokes for red, green and blue light.

83. (B) The word 'laser' is actually an acronym for light amplification by stimulated emission of radiation. Atoms or molecules of the active medium that have been excited to a higher energy level are stimulated by a passing photon to relax to a lower energy level and emit a photon that is indistinguishable from the passing photon, thereby increasing the number of photons like the incident one.

84. (C) Ordinary Hydrogen/Protium/ $^1_1\text{H}$   
 electron/ $e^-$  = 1  
 Proton/ $p^+$  = 1  
 Neutron/ $n^0$  = 0

85. (A) Plants excrete oxygen, carbon dioxide and water vapour. These gaseous waste products are got rid of by diffusion through the stomata and lenticels. The oxygen is a waste product of photosynthesis while carbon dioxide is produced in the process of respiration.

87. (C) The terabyte is a multiple of unit byte for digital information.  
 $1 \text{ TB} = 10^{12} \text{ Bytes}$   
 $= 1073741824 \text{ Kilobyte}$   
 $= 1048576 \text{ MB} = 10^{12} \text{ Gigabytes}$

89. (D) Alka Sirohi, a retired IAS officer of the Madhya Pradesh cadre, has been appointed as the new chairman of Union Public Service Commission (UPSC) with effect from September 21, 2016. She succeeded Deepak Gupta. She will be in office till completion of her term as member on January 3, 2017. Currently, Sirohi is member in the Commission.

92. (C) India has been ranked 112 out of 159 countries in the 2016 World Economic Freedom Index. As per the 2016 annual report of the Economic Freedom of the World, Hong Kong has the highest level of economic freedom worldwide, followed by Singapore, New Zealand, Switzerland, Canada, Georgia, Ireland, Mauritius, the UAE, Australia and the UK. The report is based on data from 2014 and measures the economic freedom by analyzing the policies and institutions of all 159 countries and territories.

94. (B) The book "Democrats and Dissenters" has been authored by Ramchandra Guha. The book comprises 16 essays on a wide range of issues like India's relation with its neighbours, freedom of expression, discrimination against the tribals among others.

97. (A) The Indian Constitution borrowed such features as parliamentary form of government, introduction of Speaker and his role, the concept of single citizenship, the Rule of law, procedure of law making etc from England. The Indian citizenship and nationality law and the Constitution of India provide single citizenship for all of India.

98. (C) Perfectly competitive firms are free to enter and exit an industry. They are not restricted by government rules and regulations, start-up cost, or other barriers to entry. Like perfect competition, free entry and exit of firms is possible under monopolistic competition.

99. (B) Dear Money is also known as tight money. It is the money which has to be borrowed at a high interest rate and so restricts expenditure by companies. This situation can be a result of a restricted money supply, causing interest rates to be pushed up due to the forces of supply and demand. Business may have a tough time raising capital during a period of dear money.

100. (A) Money is referred to as a measure of value and prices. Because the market enables any commodity to be turned into money and money into any commodity, objective exchange value is expressed in terms of money. It is a price index.

102. (C)  $T = K_a I_a$

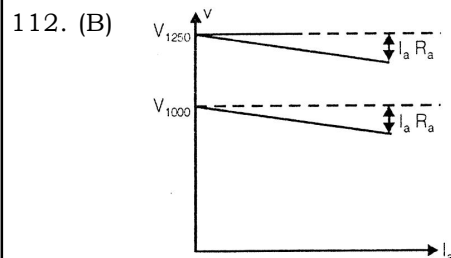
and  $E = K_n \phi N$

From above equation

$$T_1 N_1 = T_2 N_2$$

$$\therefore T_2 = \frac{T_1 N_1}{N_2}$$

$$= \frac{200 \times 25}{20} = 250 \text{ N-m}$$



In both case drop will remain same.

$\therefore$  Voltage regulation at 1250 rpm would be less than 10%.

125. (C) Plant capacity factor,

$$= \frac{\text{Peak load}}{\text{Plant capacity}} \times \text{Load factor}$$

$$0.5 = \frac{30}{\text{Plant capacity}} \times 0.6$$

$$\therefore \text{Plant capacity} = 36 \text{ W}$$

$$\begin{aligned} \therefore \text{Reserve capacity} &= \text{Plant capacity} \\ &\quad - \text{Peak load} \\ &= 36 - 30 = 6 \text{ MW} \end{aligned}$$

126. (C)  $X_c = \frac{1}{\omega C} \propto \frac{1}{\text{length}}$  as  $C \propto \text{length}$

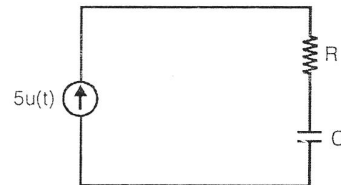
127. (D) Using source transformation we obtain equation circuits as

$$\therefore 3I^2 + 9I - 30 = 0$$

$$I = \frac{-9 \pm \sqrt{9^2 - 4(3)(-30)}}{2(3)} = 2, -5 \text{ A}$$

$I = 2 \text{ A}$  is possible as current must flow out of the positive terminal of only source.

129. (C)



$$i = \frac{C dv}{dt}$$

$$5 = \frac{C dv}{dt}$$

$$\frac{5}{C} = dv$$

Integrating

$$\frac{5t}{C} = v$$

130. (D)  $V(t) = L \frac{di}{dt}$

$$\begin{aligned} \Rightarrow V(t) &= \frac{d}{dt} (e^{at} + e^{bt}) \\ &= ae^{at} + be^{bt} \end{aligned}$$

151. (A)  $\omega = 2$

$$\Rightarrow Z(j2) = \frac{(1+j) \times \left( \frac{1}{j2C} \right)}{1+j + \frac{1}{j2C}}$$

$$= \frac{1+j}{j2C + 1 - 2C}$$

$$Z(j2) = \frac{(1+j) \times \{(1-2C) - j2C\}}{(1-2C)^2 + (2C)^2}$$

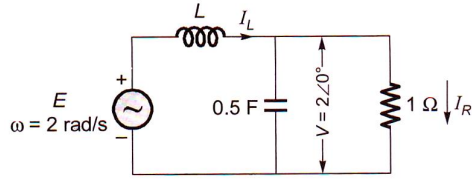
$$= \frac{(1-2C) - j2C + j(1-2C) + 2C}{(1-2C)^2 + (2C)^2}$$

Putting imaginary term to be zero.

$$-2C + 1 - 2C = 0$$

$$C = \frac{1}{4} \text{ F}$$

152. (C)



Let current through inductor,  $I_L \angle \theta$

$$\therefore I_L \angle \theta \frac{R}{1 + j\omega R} = I_C \quad \dots\dots\dots (i)$$

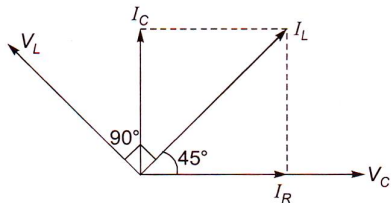
$$\text{and } I_C = \frac{2 \angle 0^\circ}{j\omega C} \quad \dots\dots\dots (ii)$$

from equation (i) and (ii).

$$I_L \angle \theta \cdot \frac{R}{1 + j\omega CR} = 2 \angle \theta$$

$$\Rightarrow \theta - \tan^{-1}(\omega CR) = 0$$

$$\Rightarrow \theta = \tan^{-1}(2 \cdot 0 + 0.5 \times 1) = 45^\circ$$

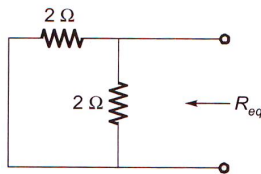


As we know, in inductor current lags the voltage by  $90^\circ$  so inductor voltage phase angle =  $90^\circ + 45^\circ = 135^\circ$  i.e. inductor voltage leads the capacitor voltage by  $135^\circ$

153. (C)  $V = L \frac{di}{dt} = \frac{Ld(t)}{dt}$

$$V = L = \text{constant} = 2 \text{ V} \Rightarrow \text{so, } L = 2$$

154. (B)



$$R_{eq} = (2 \parallel 2) = 1 \Omega$$

$$\text{Time constant} = R_{eq} \times C$$

$$= 1 \times 1 = 1 \text{ s}$$

156. (D)  $V_{oc} = 25 \text{ V}$

$I_{sc} = -5 \text{ A}$  (in opposite direction)

$$\therefore R_{Th} = \frac{25}{5} = 5 \Omega$$

(Resistance can't be negative)

163. (C)  $P = E_b \times I_a \quad I_a = \frac{V_1 - E_b}{R_a}$

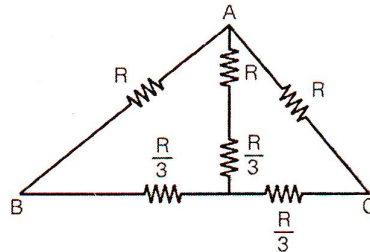
$$\frac{dp}{dE_b} = \frac{(V_t - 2E_b)}{R_a} = 0 \text{ for max}$$

$$V_t = 2 E_b \text{ or } E_b = \frac{V_t}{2}$$

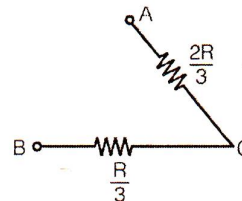
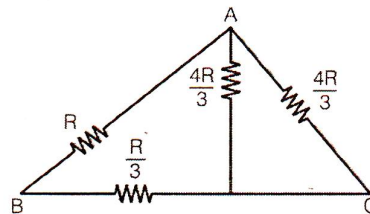
173. (C) A relay is said to 'over reach' when it operates at a current which is lower than its setting.

182. (D) Main loss of energy is at condenser.

185. (A) Converting  $\Delta$  connection ( $\Delta$ ) OBC into star connection



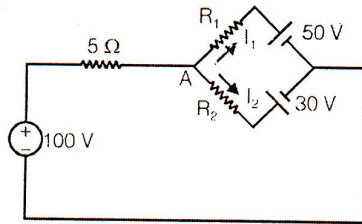
Now Reducing above network



$$\text{So } R_{AB} = \frac{2R}{3} + \frac{R}{3}$$

$$R_{AB} = R$$

186. (A)



The current through  $5\Omega$  resistance is

$$I_s = I_1 + I_2 = 1 + 5 = 6A$$

Voltage across  $5\Omega$  is  $V_s = 5 \times 6 = 30V$

The voltage at node A is

$$V_A = 100 - 30 = 70$$

$$I_2 = \frac{V_A - 30}{R_2} = \frac{40}{R_2}$$

$$\therefore R_2 = \frac{40}{5} = 8\Omega$$

$$\therefore I_1 = \frac{V_A - 50}{R_1} = \frac{20}{R_1}$$

$$\therefore R_1 = 20\Omega$$

187. (D)  $B.W = \frac{R}{L}$

$$\therefore \text{for } R = 2R \text{ and } L = \frac{L}{2}$$

$$\therefore B.W \text{ becomes } = \frac{2R}{L/2} = 4 \frac{R}{L}$$

199. (D) It is not possible to determine the voltage across 1 A source.

200. (B)  $45 = 2ki_1 + 500(i_1 + 15m) \Rightarrow i_1 = 15 \text{ mA}$