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

**Answer-key & Solution**

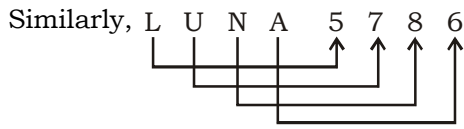
**SSC JE (Electrical)**  
**Practice Set-6**

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

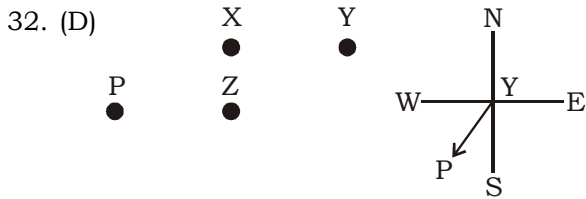
**Note :** If your opinion differ regarding any answer, please message the mock test and Question number to 9560620353

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



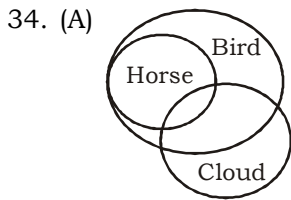


29. (B)  
30. (C)  
31. (C)

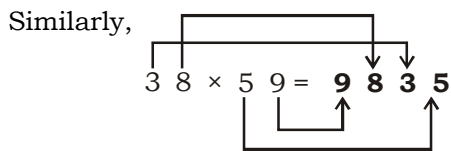
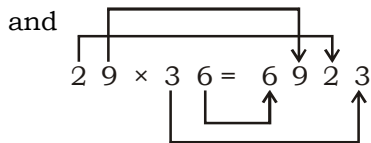
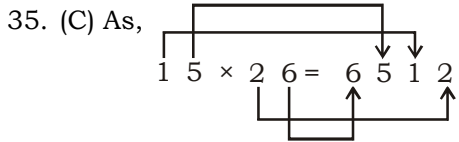


So, P is in South west of Y.

33. (C) Page → Books → Bookshelf →  
 (1) (4) (2)  
 Library → School  
 (3) (5)



So, only conclusion I follows.



36. (A)  $\sqrt{49} - \sqrt{4} + \sqrt{25}$   
 $\Rightarrow 7 - 2 + 5 = 10$   
 $\sqrt{81} - \sqrt{49} + \sqrt{16}$   
 $\Rightarrow 9 - 7 + 4 = 6$   
 $\sqrt{64} - \sqrt{9} + \sqrt{36}$   
 $\Rightarrow 8 - 3 + 6 = 11$

37. (D)  $2 = \sqrt{24 - 20}$   
 $3 = \sqrt{39 - 30}$

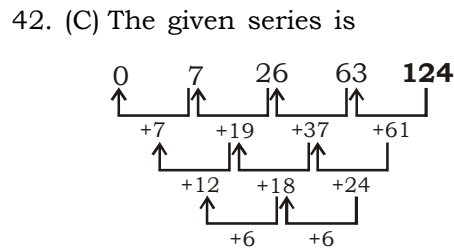
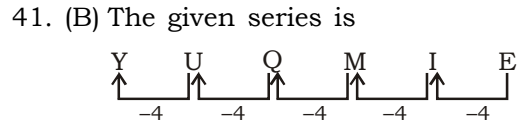
$4 = \sqrt{56 - 40}$

38. (A)

Top	6	3	5
Opposite	6	4	1

Here, digit 2 is missing which is opposite to 6.

39. (A) After interchanging the signs as per option (A), we have.  
 $2 \times 3 + 6 - 12 \div 4 = 17$   
 $\Rightarrow 2 + 3 \times 6 - 12 \div 4 = 17$   
 $\Rightarrow 2 + 18 - 3 = 17$
40. (C) As,  $(8)^2 (8 - 5) = 643$   
 and  $(9)^2 (9 - 2) = 817$   
 Similarly,  $(7)^2 (7 - 3) = 494$

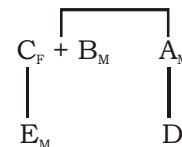


43. (B) The given series is
- A  $\xrightarrow{+8}$  I  $\xrightarrow{+8}$  Q  
 B  $\xrightarrow{+8}$  J  $\xrightarrow{+8}$  R  
 E  $\xrightarrow{+8}$  M  $\xrightarrow{+8}$  U  
 F  $\xrightarrow{+8}$  N  $\xrightarrow{+8}$  V

44. (B) The given letter series is  
 D M N N / D M N N / D M N N

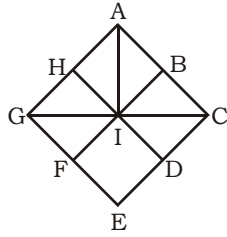
45. (D)  
46. (A)  
47. (D)

48. (D) After drawing the relational- diagram we have,



Clearly, we can say that E is the cousin of D.

49. (B) In the given figure, the triangles are as follows -



AIH, AIB, BIC, CID, GIH, GIF, ECG, ACG, AIG, AIC

∴ Total triangles = 10

59. (C) Vijayanagara is in Bellary District, northern Karnataka. It is the name of the now-ruined capital city that surrounds modern-day Hampi, of the historic Vijayanagara empire which extended over the southern part of India. The name translates as 'City of Victory', from vijaya (victory) and nagara (city). As the prosperous capital of the largest and most powerful kingdom of its time in all of India, Vijayanagara attracted people from all around the world.
60. (A) The concept of Directive Principles of State Policy was borrowed from the Irish Constitution. The makers of the Constitution of India were influenced by the Irish nationalist movement. Hence, the Directive Principles of the Indian constitution have been greatly influenced by the Directive Principles of State Policy.
62. (A) Between 26 June, 1975 to 21 March, 1977 under controversial circumstances of political instability under the Indira Gandhi's Prime ministership — "the security of India" was declared "Threatened by internal disturbances."
64. (B) Terrace farming is a type of farming that was developed first by the Inca people. This method of farming uses "steps", called andenes that are built into the side of a mountain or hill. On each anden, various crops are planted, and when it rains, instead of washing away all of the nutrients they are stopped and protected in the next level. Additionally, these "steps" prevent a free flowing avalanche of water that would take plants with it and destroy all of the crops on the hillside.
67. (D) The Kanger Ghati National Park, near Jagdalpur, in the Bastar region of Chhattisgarh is one of the most beautiful and densest National Park which is well known for its Biodiversity with picturesque landscape, magnificent waterfalls and very famous subterranean geomorphologic limestone caves.
69. (D) A rainbow is an optical phenomenon that is caused by both reflection and refraction of light in water droplets resulting in a spectrum of light appearing in the sky. It is caused by light being refracted inside on the back of the droplet and refracted again when leaving it.
71. (A) Social accounting is a method by which a firm seeks to place a value on the impact on society of its operations. It is a systematic analysis of the effects of the organisation on its shareholders, with stakeholder input as part of the data that are analysed for the accounting statement. One social accounting system primarily attempts to measure National Income, final product, consumption and accumulation of capital.
73. (C) Anamudi is located in the Indian state Kerala. It is the highest peak in the Western Ghats and South India, at an elevation of 2,695 metres. The name Anamudi literally translates to "elephant's forehead", a reference to the resemblance of the mountain to an elephant's head.
74. (C) Relative humidity is the amount of moisture in the air compared to what the air can hold at that temperature. It signifies the mass of water vapour present in the air expressed as a percentage of the mass that would be present in an equal volume of saturated air at the same temperature. So Relative humidity is normally expressed as a percentage.
79. (B) The Kaveri, also spelled Cauvery in English, is a large Indian river. The origin of the river is traditionally placed at Talakaveri, Koppal in the Western Ghats in Karnataka, flows generally south and east through Karnataka and Tamil Nadu and across the southern Deccan plateau through the south-eastern lowlands, emptying into the Bay of Bengal through two principal mouths. Rising in south-western Karnataka, it flows in south-east, some 800 km to enter the Bay of Bengal.
80. (C) The standard of living is a measure of the material welfare of the inhabitants of a country. The baseline measure of the standard of living is real national output per head of population or real GDP per

capita. This is the value of national output divided by the resident population. Other things being equal, a sustained increase in real GDP increases a nation's standard of living providing that output rises faster than the total population.

81. (C) Chloroform was once a widely used anaesthetic. Its vapour depresses the central nervous system of a patient, allowing a doctor to perform various activities and may damage the liver where chloroform is metabolized to phosgene.
84. (C) Bhatkal, also known as Batecala in some Portuguese historical texts is a port town in Uttara Kannada district of Karnataka. Alappuzha also known as Alleppey, is a city in Alappuzha District of Kerala state of southern India. Kakinada is a city and a municipal corporation in the headquarters of East Godavari district of Andhra Pradesh. Thoothukudi, also known as Tuticorin, is a port city and a Municipal Corporation in Thoothukudi district of the Indian state of Tamil Nadu.
85. (D) Sea weed is a sourced of iodine, necessary for thyroid function and to prevent goitre. However, an excess of iodine is suspected in the heightened cancer risk in Japanese who consume a lot of the plant, and even bigger risks in post-menopausal women.
88. (A) The longest cell in human body is nerve cell. The ovum is the largest cell in the human body, typically visible to the naked eye without the aid of a microscope or other magnification device. The smallest is the male sperm cell, it is one-tenth of the diameter of a human hair. Now, it is true that neurone can have very long extensions or axons, the axon isn't a cell, but a peripheral extension. The actual neuron is tiny compared to the egg cell.
91. (C) In HTML, The Bold `<B></B>` element specifies that the enclosed text should be displayed in boldface. The Underlined `<U></U>` element specifies that the enclosed text should be displayed underlined. The Italic `<I></I>` element specifies that the enclosed text should be italicized.
95. (B) Woodrow Wilson quipped, "A living things is born" after the League Covenant was drafted in 1919. The League was an inter-governmental organisation founded on 10<sup>th</sup> January 1920 as a result of the

Paris Peace Conference that ended the First World War.

96. (B) Dr. Babasaheb Ambedkar is an Indian feature film in English language, directed by Jabbar Patel. The role of Ambedkar was played by actor Mammooty: He won the National Film Award for Best Actor that year. Dr. Babasaheb Ambedkar won the National Film Awards for Best feature film in English and Best Art Direction in 1999.
98. (A) Rita Ang Sherpa, a Nepalese mountaineer has the feat of climbing Mount Everest ten times without oxygen. He first conquered Mount Everest in 1983 and then in 1984 and 1985. He went twice in 1988 and was victorious on both attempts. After these successful expeditions he continued to climb it once a year in 1990, 1992, 1993, 1995 and 1996. This resulted in him having conquered Mount Everest ten times and creating a new world record.

101. (A)  $\omega = 2$

$$\Rightarrow Z(j2) = \frac{(1+j) \times \left( \frac{1}{j2c} \right)}{1+j + \frac{1}{j2c}}$$

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

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

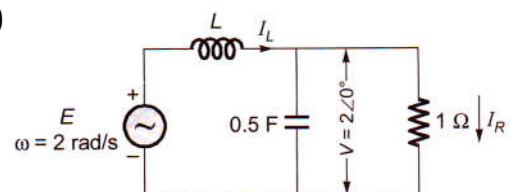
$$= \frac{(1-2C) - j2C + j(1-2C) + 2C}{(1-2C)^2 + (2C)^2}$$

Putting imaginary term to be zero.

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

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

102. (C)



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

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

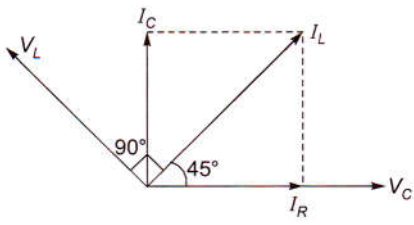
and  $I_C = \frac{2 \angle 0^\circ}{1 + j\omega C} \dots\dots\dots (ii)$

from equation (i) and (ii).

$$I_L \angle \theta \cdot \frac{R}{1 + j\omega CR} = 2 \angle 0^\circ$$

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

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



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  $135^\circ$

103. (A) Let voltage across the  $1\Omega$  grounded resistor =  $V_1$

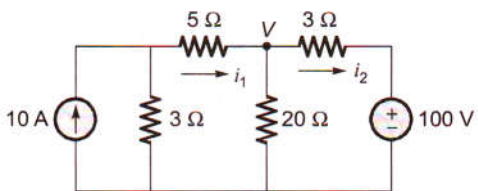
$$\therefore \frac{e_1(t) - V_1}{1} = \frac{V_1}{1} + \frac{V_1 - e_2(t)}{1}$$

$$\therefore \frac{e_1(t) + e_2(t)}{3} = V_1$$

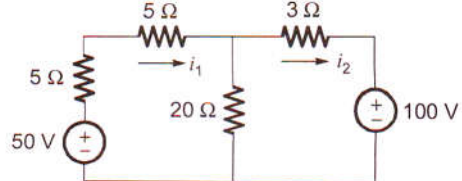
$$V_1 = \frac{\sqrt{3} \cos(\omega t + 30^\circ) + \sqrt{3} \sin(\omega t + 60^\circ)}{3}$$

after simplifying,  $V_1 = [\cos \omega t] V$

104. (C)



By applying source transformation



By applying KCL

$$\frac{V - 50}{10} + \frac{V}{20} + \frac{V - 100}{30} = 0$$

$$\frac{11}{60} V = 8.33 \Rightarrow V = 45.45V$$

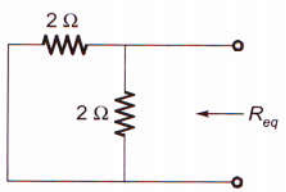
$$i_1 = \frac{50 - 45.45}{10} = 0.4545 A$$

$$i_2 = \frac{45.45 - 100}{10} = -1.818 A$$

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

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

106. (B)



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

Time constant =  $R_{eq} \times C$   
 $= 1 \times 1 = 1s$

110. (D)  $V_{oc} = 25 V$

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

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

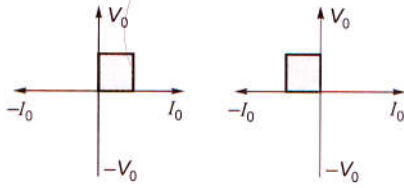
(Resistance can't be negative)

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

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

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

123. (D) In chopper a voltage and current both are positive so motor operate motoring and in chopper -B it will be reverse direction due to -ve current and motor operating as regenerative braking.



124. (D) Iron loss does not depend upon the load and it remains constant so, Iron loss at half load = 500 W.

• Full-load copper loss =  $P_c (fl) = 6400W$   
Copper loss at half load =

$$\left(\frac{1}{2}\right)^2 P_c (fl) = \frac{6400}{4} = 1600W$$

Hence, option (d) is correct.

140. (B) Surge impedance =  $\sqrt{\frac{L}{C}}$

$$= \sqrt{\frac{0.22 \times 10^{-3}}{0.202 \times 10^{-6}}} = 33\Omega$$

142. (B) Load factor

$$= \frac{\text{Units generated in a given period}}{\text{maximum demand} \times \left( \begin{array}{l} \text{Number of hours of operation} \\ \text{in the given of hours} \end{array} \right)}$$

$$= \frac{45 \times 10^5 \times 10^3}{2500 \times 10^3 \times (24 \times 365)} \times 100$$

$$= 20.54\%$$

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

151. (C) Given that  $P = 2.25 \times 10^{15}/cc$   
and  $n_i = 1.5 \times 10^{10} / cc$   
According to mass action law

$$n \cdot p = n_i^2$$

$$n = \frac{n_i^2}{p} = \frac{(1.5 \times 10^{10})^2}{2.25 \times 10^{15}} = 10^5 / cc$$

155. (C)  $V_0 = V_{CC} - I_C R_C = -I_C R_C$  neglecting constant due to  $V_{CC}$

$V_1 - V_2 = I_E R_E = I_C R_E$  as  $I_E \approx I_C$  neglecting  $R_{Th}$  and  $V_{Th}$  to neglect constant due to  $V_{CC}$

$$\therefore \frac{V_0}{V_1 - V_2} = -\frac{R_C}{R_E}$$