



# KD Campus Pvt. Ltd

2007, OUTRAM LINES, 1ST FLOOR, OPPOSITE MUKHERJEE NAGAR POLICE STATION, DELHI-110009

## Answer-key & Solution

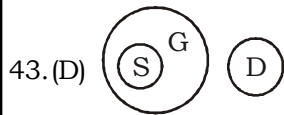
SSC JE (Electrical)  
MOCK -(105)  
Date:- 08.7.2017

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





I. No information given about boys

II. ✓

44.(A)

45.(D)  $2 \times 3 = 6$ ,  $3 \times 5 = 15$ ,  $5 \times 7 = 35$

$7 \times 11 = 77$ ,  $11 \times 13 = 143$ ,  $13 \times 17 = 221$

(Continuous prime number product)

51. (D) Arjun Vajpai is the third youngest Indian to climb Mount Everest. He achieved this feat at an age of 16 years, 11 months and 18 days. He broke the record of Krushaa Patil of Maharashtra who climbed the summit at an age of 19. On 20<sup>th</sup> May 2011, he became the youngest climber ever to summit Lhotse, aged 17 years, 11 months and 16 days. Arjun also became the youngest to climb summit Mt. Manaslu on Oct 4, 2011.

⇒ The youngest person to reach Mount Everest is a 13 year-old Indian girl named Malavath Purna.

⇒ American Jordan Romero ascended the peak in 2010 when he was 13 years and 10 months old. At 13 years and 11 months, Purna is just a month older than the worlds youngest Everest climber.

52.(D) Member of G-8 are France, West Germany, Italy, Japan, UK, United States, Canada and Russia.

Earlier 1975 summit was hosted by France that brought together six governments named G-6, France, West Germany, Italy, Japan, United Kingdom and United states. In 1976 Canada joined G-6 and it became G-7. In 1998 Russia was added till 2014 which then became G-8. Now Russia is suspended, Since 2014, the G-8 in effect comprises seven nations and the European union as the eight member.

Now, the 45th G-7 summit will be held in Schloss Elmau, Krun, Bavaria, Germany on June 7-8, 2015.

\* SAARC (South Asian Association for Regional Cooperation) - is an economic and geopolitical organisation of 8 countries, primarily located in South Asia or Indian subcontinent. Its secretariat is in Kathmandu, Nepal. The member states are Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. 18th

summit was held on 26-27 Nov 2014 in Kathmandu, Nepal and 19th will be held in 2016 in Islamabad, Pakistan.

⇒ There are 193 United Nations (UN) member states. India Joined it on 30 Oct 1945.

⇒ On 23 Sep, 2014- UN climate summit COP 21 was held in Paris in Dec 2015

⇒ G-20 comprises 20 major economies of the world. It includes 19 individual countries in which India is also a part and 20th is European Union. It was founded in 1999.

\* 9th summit- 15-16 Nov 2014 was held in Brisbane, Australia

\* 10th summit- 15-16 Nov 2015- Antalya, Turkey

\* 11th summit- 2016 Hangzhou, China

53. (B) Govind Ballabh Pant served as Union Home Minister from 1955-1961. In 1955, he was awarded Bharat Ratna for his achievement in re-organising states on linguistic lines. He was also responsible for the establishment of Hindi as an official language of the Central government and a few states.

In 2015 - Madan Mohan Malaviya and Atal Bihari Vajpayee received Bharat Ratna Award.

56. (B)

⇒ Hindu College, Calcutta was established in 1817.

⇒ Delhi College was established in 1692

⇒ Mayo College was established in 1875

⇒ Muslim Anglo Oriental College in (1875-78).

57. (B) Life-Jacket works on the principle of buoyancy. The buoyancy of a substance depends on the amount of weight it displaces. The higher the amount of weight a body can displace, greater the buoyancy it will generate. When a body is in water, it displays an equal amount of water to its weight. But life jacket consists of a very little material and displaces water 10 times its weight. Also, when a body is in water it creates a buoyant force that pushes it upwards. Thus, a life Jacket doesn't have to support all the weight of the body as the body itself generates a buoyant force.

59. (C) After the communist victory in World War-II, Yugoslavia was set up as a

- federation of six republics, with borders drawn along ethnic and historical lines- Slovenia, Croatia, Bosnia and Herzegovina, Serbia, Montenegro and Macedonia.
61. (B) An anemometer or windmeter is a device used for measuring wind speed, wind pressure and is a common weather station instrument.
64. (B) Company Charter Act 1858 or Government of India Act 1858 was an Act of the Parliament of the United Kingdom passed on Aug 2, 1858. Its provisions called for the liquidation of the British East India Company and the transference of its functions to the British Crown.
70. (C) The government stripped its right to issue notes after passing the Paper Currency Act, 1861. From 1862 to 1935, India had single- coloured and uni-faced notes or bills printed on one side. RBI was established in 1934. Right to issue currency notes was given to RBI under legal tender in 1945. Mahatma Gandhi series of notes was introduced by RBI in 1996 with the 10 and 500 bank notes.
71. (B) Hydrogenated amorphous silicon helps to convert solar energy into electrical energy.
72. (A) A Hydraulic system is a device in which small applied force can give rise to a larger force and works on Pascal's law. This principle is used in Hydraulic Jacks, Hydraulic Brakes, Hydraulic pumps etc. Pascal's law states that when there is an increase in pressure at any point in a confined fluid, there is an equal increase at every other point in the container. Most aircraft use hydraulics in the braking system and landing gear.
79. (D) Hydrogenation means adding hydrogen to a substance, Nickel as a catalyst is used in this process. Liquid vegetable oils that are unsaturated will react with hydrogen at about 60° C in the presence of a nickel catalyst.
80. (A) Hemophilia is a rare bleeding disorder in which the blood doesn't clot normally. This bleeding can damage your organs and tissues and may be life threatening. Hemophilia is inherited i.e. this disorder is passed from parents to children through genes.

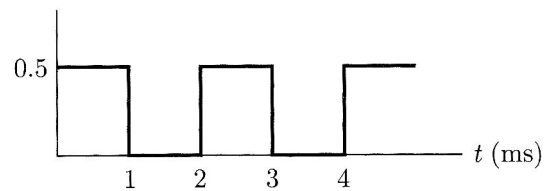
81. (A) Aligarh Muslim University (AMU) is funded by Central government of India and is a public University. Originally established by Sir Syed Ahmad Khan as Mohammedan Anglo-Oriental College in 1875, it became AMU in 1920.
85. (C) India House was an informal Indian nationalist organisation based in London between 1905 and 1910. With the patronage of Shyamji Krishna Varma, it was launched to promote nationalist views among Indian students in Britain.
88. (B) Qutb-ud-Din Muhammad Muazzam titled as Shah Alam ascended the throne in the name of Bahadur Shah in 1707. He was the seventh Emperor of Mughal Empire who ruled India from 1707 to 1712
93. (C) Brakish water lake named as Chilika lake is situated in orissa in Puri, Khurda and Ganjam districts at the mouth of Daya River, flowing into the Bay of Bengal. It is the largest coastal lagoon in India and the second largest lagoon in the world.

101. (D) Since  $i = \frac{5}{10k} = 0.5 \text{ mA}$ ,

$i(t)$  will be a square wave

So average value is  $\frac{0.5}{2} = 0.25 \text{ mA}$

$i(t)$  (mA)

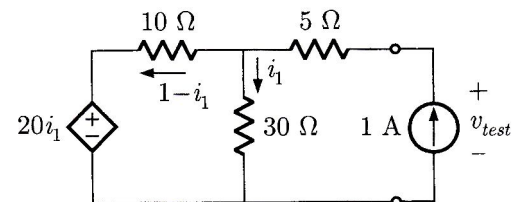


103. (D)  $i_2 = \frac{v_2}{50} = 0.2v_2$

$10 = -v_2 + 100(-0.02v_2 + 0.04v_2)$

$10 = -v_2 + 2v_2 \Rightarrow v_2 = 10 \text{ V}$

104. (C) The circuit is as shown below



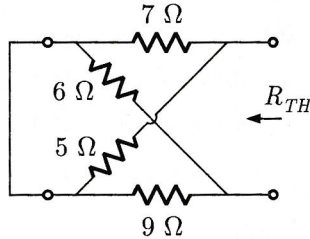
$i_N = 0$ ,

$20i_1 = 30i_1 - 10(1 - i_1) \Rightarrow i_1 = 0.5 \text{ A}$

$$v_{\text{test}} = 5 \times 1 + 30 \times 0.5 = 20 \text{ V}$$

$$R_N = \frac{v_{\text{test}}}{1} = 20 \Omega$$

105. (C) The circuit is as shown below



$$R_{\text{TH}} = 7 \parallel 5 + 6 \parallel 9 = 6.52 \Omega$$

For maximum power transfer

$$R_L = R_{\text{TH}} = 6.52 \Omega$$

106. (B) For series critically damped circuit

$$R_0 = \sqrt{\frac{4L}{C}} = \sqrt{\frac{4 \times 4}{10m}} = 40 \Omega$$

$$R \parallel 120 = 40 \Omega$$

$$R = 60 \Omega$$

107. (C)  $S = V_{\text{rms}} I_{\text{rms}} = (21 \angle 20^\circ)(8.5 \angle 50^\circ)$   
 $= 61 + j167.7 \text{ VA}$

108. (A) Impedance seen by  $R_L = 10 \times 4^2 = 160 \Omega$   
 For maximum power  $R_L = 160 \Omega$ ,  $Z_0 = 10 \Omega$

$$P_{L_{\text{max}}} \left( \frac{100}{10 + 10} \right)^2 \times 10 = 250 \text{ W}$$

109. (A)  $Q = \frac{\omega_0}{B} = \frac{\sqrt{f_1 f_2}}{f_2 - f_1} = 87.97 / 4 \approx 22$

111. (A) At the instant of starting

$$E_a = V_t - I_a R_a - V_{\text{brush}} = 0$$

or  $I_a = \frac{V_a - V_{\text{brush}}}{R_a} = \frac{120 - 2}{0.2} = 590 \text{ A}$

112. (C) The field current:  $I_{\text{sh}} = 400/200 = 2 \text{ A}$   
 The armature current  $I_a = 30 - 2 = 28 \text{ A}$   
 The back emf of the motor

$$E_a = 400 - 28 \times 1 = 372 \text{ V}$$

The total voltage in the armature circuit at the time of plugging is

$$V_{\text{a(total)}} = 400 + 372 = 772 \text{ V}$$

116. (A) Line length is 100 km so it is considered as a short transmission line.

Loss of the line

$$\text{Total } P_{\text{loss}} = 3I_p^2 R$$

$$P = \sqrt{3} V_L I_L$$

$$I_L = \left( \frac{150M}{\sqrt{3} \times 110K} \right)$$

$$15M = \left( \frac{150M}{\sqrt{3} \times 110K} \right)^2 \times R$$

$$R = \frac{110 \times 110 \times 3}{1500}$$

$$= 24.2/3$$

$$= 8.06 \Omega/\text{phase}$$

147. (C)

$$\therefore N_1 = \frac{120 f_1}{P_1}$$

$$\therefore f_1 = 50 \text{ Hz}, P_1 = 4, f_2 = \frac{f_1}{2}$$

$$P_2 = \frac{P_1}{2}$$

$$N_2 = \frac{120 f_2}{P_2} = \frac{120 \cdot f_1}{2 \cdot P_1 / 2}$$

$$= \frac{120 f_1}{P_1} = \frac{120 \times 50}{4} = 1500 \text{ rpm}$$

148. (A)  $\therefore$  At maximum efficiency Iron loss = copper loss = 1000 W

$\therefore$  It occurs at full load, So, full load Copper loss =  $I_{fl}^2 \cdot R = 1000 \text{ watt}$

At half load,

$$\text{Copper loss} = \left( \frac{I_{fl}^2}{2} \right) \times R = \frac{1}{4} I_{fl}^2 \times R$$

$$= \frac{1000}{4} = 250 \text{ watt}$$

152. (A) Loss angle = 0.01 radian

$$\text{or, } \theta_L = 0.01 \times \frac{180}{\pi}$$

$$= 0.572958$$

$$\text{P.F. angle} = 90 - 0.572958$$

$$= 89.42$$

$$\text{Active power consumed} = VI \cos \theta$$

$$= 1000 \times 0.5 \times \cos(89.427)$$

$$= 4.999 \approx 5 \text{ watt}$$

153. (D)  $I_{\text{rms}}$  = rms value of current

$$= \sqrt{\frac{(20)^2(10+0) + (-10)^2(30-10)}{(10+20)}}$$

$$= 14.14 \text{ A}$$

162. (D) It is defined as,

$$\text{Discharge factor} = \frac{\text{Discharge voltage (crest value)}}{\text{Rated voltage (rms value)}}$$

$$= \frac{373\sqrt{2}}{211} = 2.5$$

164. (D)  $V_a = i_a \sqrt{\frac{L}{C}}$

$$\Rightarrow V_a = 10 \sqrt{\frac{1}{(0.01 \times 10^{-6})}}$$

$$= 100 \text{ KV}$$

165. (A)  $Q_c = P(\tan \phi_1 - \tan \phi_2)$

$$\because \cos \phi_1 = 0.707$$

$$\Rightarrow \phi_1 = 45^\circ$$

$$\text{and } \cos \phi_2 = 0.866$$

$$\Rightarrow \phi_2 = 30^\circ$$

$$\text{So, } Q_c = 17.32 (\tan 45^\circ - \tan 30^\circ)$$

$$= 7.32 \text{ KVAR}$$

166. (A) Forward field slip

$$S_f = \frac{N_s - N_t}{N_s}$$

$$= \frac{1500 - 1300}{1500} = 0.133 \text{ Hz}$$

$$\text{Rotor frequency due to forward field} = S_f$$

$$= 0.133 \times 50 = 6.67 \text{ Hz}$$

$$\text{and due to backward field} = (2-S)f$$

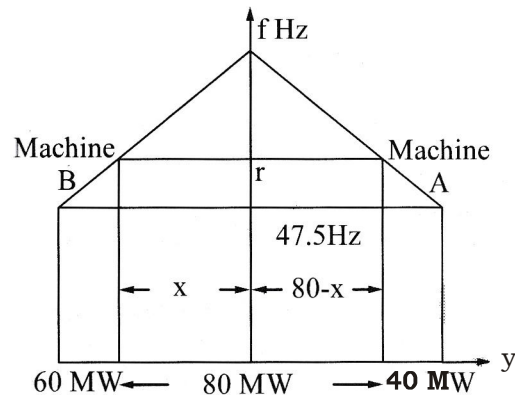
$$= (2-0.133) \times 50$$

$$= 93.33 \text{ Hz}$$

170. (B) Change in frequency from no load to full load

$$\because f_1 = 50 \times 0.05 = 2.5 \text{ Hz}$$

$$\text{i.e., } f_{1f} = 50 - 2.5 = 47.5 \text{ Hz}$$



Since both have same speed regulation then,

$$f_{1d} = f_{f2}$$

For machine A,

$$\frac{50 - f}{80 - x} = \frac{50 - 47.5}{40}$$

$$\Rightarrow x - 16f = 80 - 16 \times 50$$

$$\Rightarrow x - 16f = -720 \quad \dots(1)$$

For machine B,

$$\frac{50 - f}{x} = \frac{50 - 47.5}{60}$$

$$\Rightarrow x + 24f = 24 \times 50 \quad \dots(2)$$

From equation (1) and (2)

$$x = 48 \text{ MW}$$

$$f = 60 \text{ Hz}$$

So, machine A operates at a load of 48 MW

While machine B will operate at a load of

$$80 - 48 = 32 \text{ MW}$$