



K D Campus Pvt. Ltd

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

Answer-key & Solution

**SSC JE (CIVIL)
Practice Set-10**

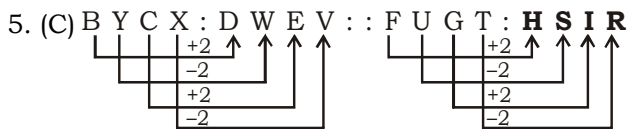
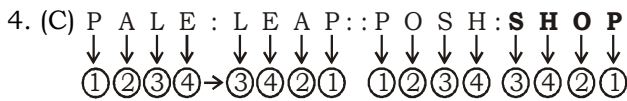
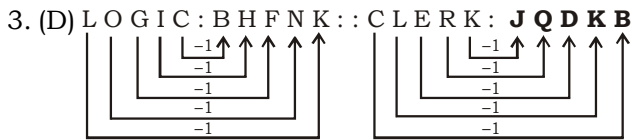
1. C	26. D	51. D	76. A	101. B	126. B	151. B	176. A
2. C	27. B	52. C	77. B	102. C	127. B	152. B	177. B
3. D	28. D	53. A	78. C	103. B	128. C	153. A	178. C
4. C	29. B	54. C	79. D	104. A	129. C	154. C	179. C
5. C	30. D	55. B	80. C	105. D	130. D	155. A	180. D
6. C	31. C	56. A	81. C	106. A	131. D	156. B	181.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

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

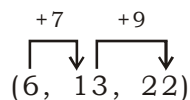
SOLUTION SSC JE (Civil) Practice Set-10

1. (C) First is an improper form of the second.
2. (C) Drama is performed on a Stage. Similarly, Tennis is played in court.

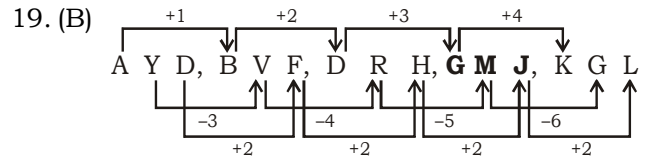
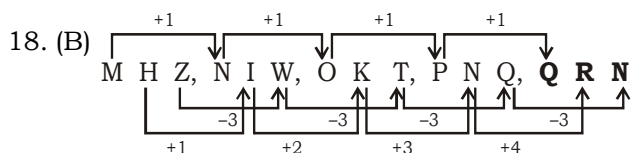
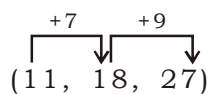


6. (C) The relation is $x : \frac{x^2}{2}$
 $4 : \frac{4^2}{2} = 4 : 8$

7. (D) $5^2 = 25$
 $(5 + 1)^2 + 1 = 37$
Similarly, $7^2 = 49$ and $(7 + 1)^2 + 1 = 65$
8. (C) All except Brigadier are ranks in navy.
9. (B) Other options are carbon or its allotropes.
10. (D) All other groups contains three consecutive letters, though not in order.
11. (D) In all other groups, one letter is repeated three times.
12. (B) In all other groups, the small letters are vowels.
13. (D) Small letters are at odd places and capital letters are at even places in each option.
14. (B) In all other pairs, the first number is seven times the second number.
15. (D) In all other pairs, the ratio of the two numbers is 8 : 9.
16. (D) In all other pairs, the difference between the two numbers is multiple of 9.
17. (C) Given set :



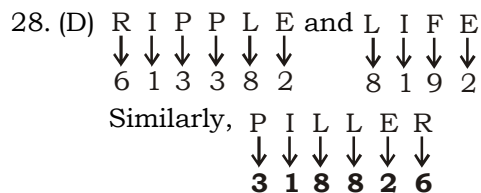
following the same sequence :
option (C) follows :



20. (D) Reverse the letter
21. (A) The number of letters in the terms goes on leaving one letter after each set and the next set has one letter more than the previous one.
22. (C) 1, 2, 5, 12, 27, 58, 128, ?
 $1 \times 2 + 0 = 2$
 $2 \times 2 + 1 = 5$
 $5 \times 2 + 2 = 12$
 $12 \times 2 + 3 = 27$
 $27 \times 2 + 4 = 58$
 $58 \times 2 + 5 = 121$
 $121 \times 2 + 6 = 248$

\therefore missing number = $121 \times 2 + 6 = 248$

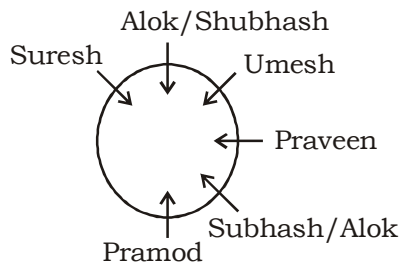
23. (A) The pattern is
 n^{th} term + $(n + 1)^{\text{th}}$ term + $(n + 1) = (n + 2)^{\text{th}}$ term.
This,
 1^{st} term + 2^{nd} term + 2 = 3^{rd} term and so on
 \therefore missing term = 6^{th} term
= 4^{th} term + 5^{th} term + 5
= $24 + 41 + 5 = 70$
24. (A) The given numbers are sequence of prime numbers.
25. (B) The pattern is +1, +1 + 2, +1 + 2 + 3, and so on.
 \therefore missing no = $15 + (1 + 2 + 3 + 4) = 25$
26. (D) The series is **baac/accb/cbba/baac**
27. (B) The series is **ccacc/aabaa/bbcb/c**



29. (B) (her) idea (has) merit \rightarrow fo (la) (bu) na
merit (list) (has) been (displayed) \rightarrow jo ke (la) (Si) (na)
(her) (name) (displayed) there \rightarrow (ya) (Si) (bu) zo
(name) in merit (list) \rightarrow (na) (ya) go ke
la \rightarrow has

30. (D) 31. (C) 32. (B)

33. (C)



34. (A) $\frac{\text{Lucknow}}{1}, \frac{\text{Uttar Pradesh}}{2}, \frac{\text{India}}{3}, \frac{\text{Asia}}{5}, \frac{\text{World}}{4}$

35. (D) First column $\rightarrow 2^3 + 1^3 + 3^3 = 36$
Third column $\rightarrow 0^3 + 4^3 + 3^3 = 91$
Similarly,

$$\text{In second column } \rightarrow 4^3 + 2^3 + 1^3 = 73$$

36. (A) First column $\rightarrow 4^2 + 2^2 + 1^2 = 21$
Second column $\rightarrow 5^2 + 3^2 + 8^2 = 98$
Similarly,

$$\text{Third column } \rightarrow 6^2 + 7^2 + 3^2 = 94$$

37. (D) $7 \times 2 + 1 = 15$
 $15 \times 2 + 1 = 31$
 $31 \times 2 + 1 = 63$
 $63 \times 2 + 1 = 127$
 $127 \times 2 + 1 = 255$

38. (C) First row $= (8 \times 2) + 17 = 33$
Second row $= (12 \times 2) + 5 = 29$
Third row $= (10 \times 2) + 13 = 33$

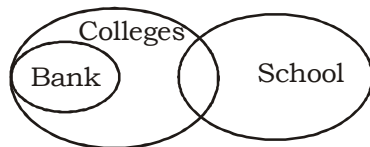
39. (D) First row $\rightarrow (85 \div 5) + 3 = 20$
Second row $\rightarrow (126 \div 6) + 3 = 24$
Third row $\rightarrow (175 \div 7) + 3 = 28$

40. (C) Total number
 $= (2008 - 1997) + 3 = 11 + 3 = 14$
Now, dividing 14 by 7, remainder = 0
Hence, required day

$= \text{Saturday} + 0 = \text{Saturday}$

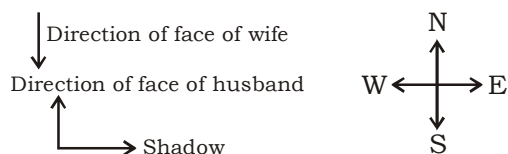
41. (C) 42. (C)

43. (C)



44. (C) $24 \div 2 = 4 \times 3$
 $12 = 12$

45. (C) Sun will be in the west at the time of sunset. So at this time shadow will be formed in east direction. According to the question,



Clearly, husband was walking towards north direction. Hence, wife was walking towards south direction.

46. (D) She may be the mother or aunt of Mukesh.

47. (D) 48. (B) 49. (A) 50. (C)

104. (A)

$$L \times l = L_1 \times L_1$$

$$\Rightarrow L = 841.5m, l = 20.1m, l_1 = 20m$$

$$\Rightarrow L_1 = \frac{841.5 \times 20.1}{20}$$

$$L_1 = 845.7m$$

107. (C) Height of lighthouse

$$= 0.0673 \times D^2$$

$$= 0.0673 \times (40)^2 = 107.68m$$

110. (B) The following relationship should exist:

(i) The axis of the plate level should be perpendicular to the vertical axis.

(ii) The axis of the altitude level must be parallel to the line of collimating.

(iii) The axis of the striding level (if provided) must be parallel to the horizontal axis.

(iv) The line of collimation must be parallel to the plate level axis.

(v) The line of collimation must be perpendicular to the horizontal axis at its intersection with the vertical axis.

(vi) The horizontal axis must be perpendicular to the vertical axis.

111. (B) For velocity components of a two or three dimensional flow continuity equation

$$\frac{du}{dx} + \frac{dv}{dy} + \frac{dw}{dz} = 0 \text{ should be satisfied.}$$

112. (D) Shear stress, $\tau = \mu \frac{du}{dy} = \mu(0.5 - 2y)$

$$\text{at } y = 0.2m$$

$$\tau = 0.9 \times (0.5 - 2 \times 0.2) = 0.09 \text{ N/m}^2$$

114. (C) In a whirlpool in an ideal liquid,

$$V \propto \frac{1}{r} \text{ i.e., } vr = \text{constant}$$

$$\text{Now, } V_1 = 10m/s, r_1 = 20 \text{ cm}$$

$$\text{When } r_2 = 50 \text{ cm}$$

$$V_2 = \frac{V_1 r_1}{r_2} = \frac{10 \times 20}{50} = 4 \text{ m/s}$$

Depression of free surface.

$$Z = \frac{V^2}{2g} = \frac{4^2}{2} \times 0.102 = 0.816m$$

117. (C) For rectangular notch or weir

$$\frac{dQ}{Q} = \frac{3dH}{2H}$$

$$\Rightarrow \frac{dQ}{Q} = 1.5 \times \left(\frac{0.15 - 0.13}{0.15} \right)$$

$$\Rightarrow \frac{dQ}{Q} = 0.2$$

Percentage error in flow rate = $0.2 \times 100 = 20\%$

118. (B) For a rectangular weir

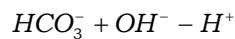
$$Q = \left(\frac{2}{3} C_d L \sqrt{2g} \right) H^{3/2} = KH^{3/2}$$

$$dQ = \frac{2}{3} KH^{1/2} .dH$$

$$\frac{dQ}{Q} = \frac{\frac{2}{3} KH^{1/2}}{KH^{3/2}} .dH = \frac{2}{3} \frac{dH}{H}$$

For an error of 1.5% in measurement of head, corresponding error in discharge = $1.5 \times 1.5 = 2.25\%$

128. (C) Alkalinity expressed in equivalents



Milliequivalent mass of $[HCO_3^-]$

$$= \frac{122}{61} = 2 \text{ meq} / L$$

Milliequivalent mass of $[OH^-]$

$$\frac{10^{-7}}{17} \text{ meq} / L$$

Milliequivalent mass of $[OH^+]$

$$\frac{10^{-7}}{7} \text{ meq} / L$$

The Milliequivalent of $[OH^-]$ and $[OH^+]$ are negligible. So Alkalinity as $CaCO_3$
= $2 \times 50 = 100 \text{ mg/L}$

131. (D) Given $V_s = 2V_v$

$$\text{Void Ratio, } e = \frac{V_v}{V_s} = 0.5$$

$$\text{Porosity, } n = \frac{e}{1+e} = \frac{0.5}{1.5} = \frac{1}{3} \text{ or } 33.33\%$$

$$132. (A) \gamma_d = \frac{G}{1+e} \gamma_w$$

$$e = \frac{G \gamma_w}{\gamma_d} - 1 = \frac{2.7 \times 10}{18} - 1 = 0.5$$

133. (B) $G_w = S_e$

$$S = \frac{260 \times 50}{1.3} = 100\%$$

Therefore soil is fully saturated

Remember

$S \leq 100\%$ always

W can be more than 100%

e can be more than 1.0

137. (B) The maximum dry density of the cohesive soil is given by

$$\gamma_d = \frac{G \gamma_w}{1+e}$$

$$16 = \frac{2.65 \times 9.81}{1+e} \Rightarrow e = 0.625$$

138. (D) If V is the volume of wet soil mass, then

$$\text{Volume of air } V_a = \frac{V}{6}$$

$$\text{Volume of water } V_w = \frac{V}{3}$$

But void ratio is given by

$$e = \frac{V_v}{V_s}$$

Where, V_v = Volume of voids

$$= V_a + V_w$$

$$= \frac{V}{6} + \frac{V}{3} = \frac{V}{2}$$

$$\text{Also, } V_s = V - V_v = V - \frac{V}{2} = \frac{V}{2}$$

$$e = \frac{V_v}{V_s} = \frac{V}{2} = 1$$

139. (D) Average permeability in horizontal direction,

$$K_{ex} = \frac{k_1 h_1 + k_2 h_2 + k_3 h_3}{h_1 + h_2 + h_3} = \frac{7}{3} k$$

Average permeability in vertical direction,

$$K_{ev} = \frac{h_1 + h_2 + h_3}{\frac{h_1}{k_1} + \frac{h_2}{k_2} + \frac{h_3}{k_3}} = \frac{12}{7} k$$

$$\frac{k_{ex}}{k_{ev}} = \frac{49}{36}$$

140. (A) Porosity is expressed as

$$n = \frac{e}{1+e} = \frac{0.5}{1+0.5} = \frac{1}{3}$$

Seepage velocity,

$$V_s = \frac{v}{n}$$

$$\frac{5 \times 10^{-7}}{1/3} = 15 \times 10^{-7} \text{ m/s}$$

141. (B) $Duty = \frac{864 \times 120}{70} = 1481 \text{ ha / cumec}$

142. (C) The classification of soils as per electrical conductivity (EC) in mi IM mhos/cm, Exchangeable sodium percentage (ESP) and pH values is tabulated below:

Classification	EC	ESP	PH
Saline soil or white alkali	> 4	< 15	< 8.5
Alkaline soil or Non-saline soil or sodic soil or Black Alkali	< 4	> 15	8.5 to 10.0
Saline-alkali soil	> 4	> 15	< 8.5

144. (C) Water available to the soil

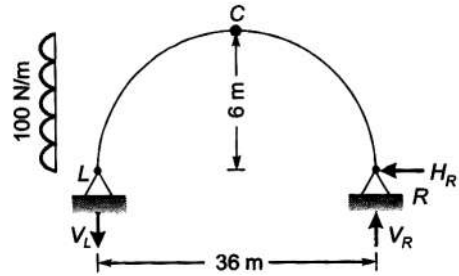
$$= \frac{25}{100} \times 80 = 20$$

Additional water required = 80-20 = 60 mm

$$\text{Frequency of irrigation} = \frac{60}{2.8} = 21.43 \text{ days}$$

Thus the crop should be irrigated after every 21 days.

180. (D) The vertical reaction at right support



$$V_R = \frac{1000 \times 6 \times 3}{36} = 500 \text{ N}$$

Considering right segment and taking moment about crown.

$$H_R \times 6 = V_R \times 18$$

$$H_R = 1500 \text{ N and } H_L = 6000 - 1500 = 4500 \text{ N}$$

181. (D) The bending moment throughout the span will be zero for a three hinged parabolic arch subjected to uniformly distributed load.

187. (A) Throat thickness,

$$t = 0.7 \times 6 = 4.2 \text{ mm}$$

Polar modulus of inertia,

$$I_p = 2\pi R^3 t$$

Shear stress,

$$\tau = \frac{T.R}{I_p} = \frac{8 \times 10^6 \times 60}{2\pi \times 60^3 \times 4.2}$$

$$\therefore \tau = 84.21 \text{ N/mm}^2$$

192. (C) The horizontal distance between parallel main reinforcement bars shall not be more than three times the effective depth of solid slab or 300 mm whichever is smaller. The total reinforcement in the slab should remain same. By replacing 10 mm bars by 12 mm bars, the spacing will increase as

$$\left(\frac{d_2}{d_1}\right)^2 \times S_1 = \left(\frac{12}{10}\right)^2 \times 10 = 14.4 \text{ cm}$$

194. (C) The diameter of the bars shall not exceed one eighth of the total thickness of the slab.

$$\therefore \text{Maximum size} = \frac{75}{8} = 9.375 \text{ mm}$$

So the diameter will be 8 mm.