Answer-key & Solution

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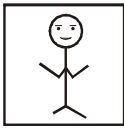
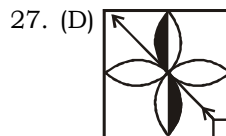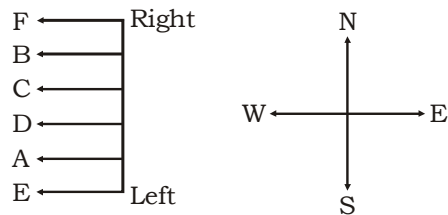|							
1. D	26. B	51. C	76. C	101. A	126. A	151. B	176. B
2. A	27. D	52. C	77. A	102. A	127. D	152. A	177. B
3. B	28. A	53. A	78. D	103. B	128. C	153. A	178. D
4. B	29. B	54. D	79. B	104. A	129. B	154. C	179. C
5. D	30. C	55. B	80. C	105. B	130. D	155. A	180. D
6. C	31. C	56. C	81. C	106. A	131. C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

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

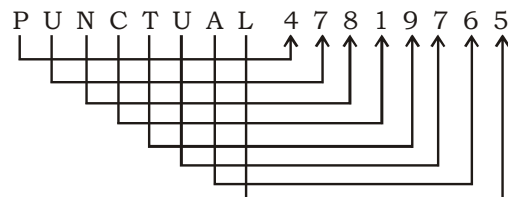**Note :** *If you face any problem regarding result or marks scored, please contact : 9313111777*

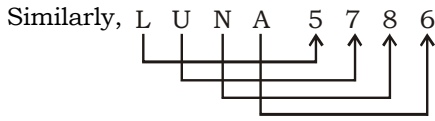## SOLUTION SSC JE (Mechanical) Practice Set-6

1. (D) As, $(1)^2 = 1$
   Similarly, $(25)^2 =$ **625**

2. (A) People of France are called French and people of Holland are called Dutch.

3. (B) As $\dfrac{525}{21} = 25$

   Similarly, $\dfrac{315}{21} =$ **15**

4. (B) Video is stored in a cassette and Computer uses floppy to store the data.

5. (D)

$$\overset{+2}{A\ B\ C\ D\quad F\ G\ I\ H}$$
$$\underset{+1\quad +1\quad +1\quad -1}{}$$

$$\overset{+2}{\textbf{Y Z A B}\quad D\ E\ G\ F}$$
$$\underset{+1\quad +1\quad +1\quad -1}{}$$

6. (C) As, A D H M
   ↓ ↓ ↓ ↓   (opposite letters)
   Z W S N
   Similarly, CFJO → XUQL

7. (B) Quick is opposite of slow and youthful is opposite of **aged**.

8. (D) A **hydrant** is a source of water and tree is a source of sap.

9. (D) A tricycle has 3 wheels, similarly trimester has 3 months.

10. (C) As, B E H K
    ↓ ↓ ↓ ↓   (Opposite)
    Y V S P
    Similarly, CFIL → XURO

11. (C) On observing every options, we have.
    (a) $16, 25 \Rightarrow (4)^2, (5)^2$
    (b) $36, 49 \Rightarrow (6)^2, (7)^2$
    (c) $64, 83 \Rightarrow (8)^2, 83$
    (d) $100, 121 \Rightarrow (10)^2, (11)^2$

12. (B) Frog, Turtle and Crab can survive without water whereas fish can't.

13. (C) Except (63), rest are prime numbers.

14. (B) Except option (B), In others second number is divisible by first number.

15. (C) Rest of the items can be prepared from milk.

16. (D) Except (D), the difference of the numbers is divisible by 3.

17. (B) In option (B), numerator is greater than denominator

18. (D) (a) $X \xrightarrow{+2} Z \xrightarrow{-1} Y$

    (b) $M \xrightarrow{+2} O \xrightarrow{-1} N$

    (c) $P \xrightarrow{+2} R \xrightarrow{-1} Q$

    (d) $E \xrightarrow{-4} A \xrightarrow{+2} C$

19. (C)

20. (C)

21. (C)

1986	1988	1990	1992	1994
17	35	71	125	197

   +18×1 +18×2 +18×3 +18×4

22. (B) 7   8   12   20 21 37   62

   $+(1)^2$ $+(2)^2$ $+(3)^2$ $+(4)^2$ $+(5)^2$

23. (C) As, $(1 × 2) (2 × 2) (4 × 2) = 248$
    and $(1 × 2) (2 × 2) (3 × 2) = 246$
    then, $(3 × 2) (2 × 2) (4 × 2) =$ **648**

24. (B)

25. (D) abcd / aabbccdd / aaabbbcccddd

26. (B) The order in which boys are sitting is mentioned below.

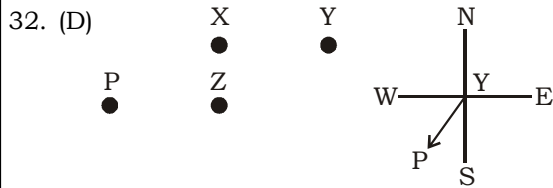   F ← ⎤ Right
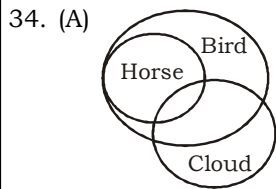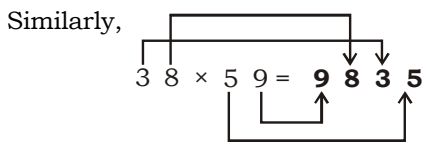   B ←
   C ←
   D ←
   A ←
   E ← ⎦ Left

   N
   W ← → E
   S

27. (D)

28. (A) As,

   P U N C T U A L   4 7 8 1 9 7 6 5

Similarly, L U N A 5 7 8 6

29. (B)

30. (C)

31. (C)

32. (D)

X   Y

P   Z

N

W —— Y —— E

P   S

So, P is in South west of Y.

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

34. (A)

Bird, Horse, Cloud

So, only conclusion I follows.

35. (C) As,

1 5 × 2 6 = 6 5 1 2

and

2 9 × 3 6 = 6 9 2 3

Similarly,

3 8 × 5 9 = **9 8 3 5**
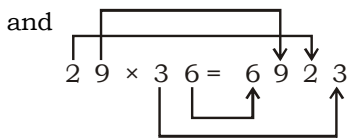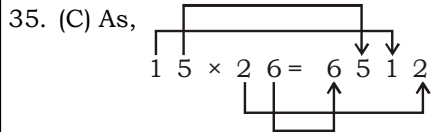
36. (A) $\sqrt{49} - \sqrt{4} + \sqrt{25}$

$\Rightarrow 7 - 2 + 5 = 10$

$\sqrt{81} - \sqrt{49} + \sqrt{16}$

$\Rightarrow 9 - 7 + 4 = \mathbf{6}$

$\sqrt{64} - \sqrt{9} + \sqrt{36}$

$\Rightarrow 8 - 3 + 6 = 11$

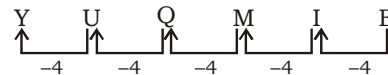37. (D) $2 = \sqrt{24 - 20}$

$3 = \sqrt{39 - 30}$

$4 = \sqrt{56 - 40}$

38. (A)

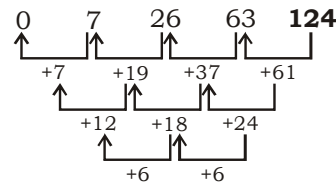|			
Top	6	3	5
Opposite	6	4	1

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, $(7)^2 (7 - 3) = \mathbf{494}$
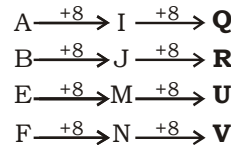
41. (B) The given series is

Y   U   Q   M   I   E
  −4   −4   −4   −4   −4

42. (C) The given series is

0   7   26   63   **124**
  +7   +19   +37   +61
     +12   +18   +24
        +6   +6

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**
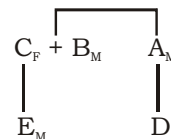
F $\xrightarrow{+8}$ N $\xrightarrow{+8}$ **V**

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,

$C_F + B_M$ A_M

E_M D

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

49. (B) In the given figure, the triangles are as follows –
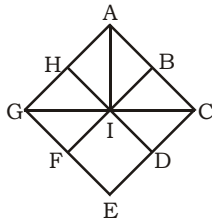
AIH, AIB, BIC, CID, GIH, GIF, ECG, ACG, AIG, AIC

∴ 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, Kopagu 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 10th 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 Mammootty: 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.

than friction force at sliding instant.

So, friction force on the block = 20 N

120. (D) We know

$$C_s = \frac{\omega_1 - \omega_2}{\overline{\omega}}$$

Given,

$\omega_1 - \omega_2$ = 4% of mean speed $\overline{\omega}$

$\omega_1 - \omega_2 = 0.04\,\overline{\omega}$

$$C_s = \frac{0.04\overline{\omega}}{\overline{\omega}} = 0.04$$

123. (C) Circumferential stress = ρv^2

$\Rightarrow 25 \times 10^6 = 7 \times 1000 \times v^2$

$\Rightarrow v^2 = 3600$

$\Rightarrow v = 60 \text{m/s}$

125. (B) $d = 6\sqrt{t} = 6\sqrt{12} = 20.78 \ mm$

126. (A) m = 1.5d = 1.5×10 = 15mm

128. (C) Dynamic viscosity

= ρ.v

= 0.9×1000×0.28×10⁻⁴

(1 stoke = 10⁻⁴ m²/s)

138. (A) $h = x\left(\dfrac{S_{Hg}}{S_L} - 1\right) = 0.1\left(\dfrac{13.6}{0.98} - 1\right)$

= 1.2 m

143. (C) from first law of thermodynamics

Q = ΔU + W

$U_B - U_A$ = Q - W

= 180 - 130 = 50kJ

Since, internal energy is property (is independent of path function)

$U_B - U_A$ = Q - W

50 = Q - 40

Q = 90 kJ

144. (C) It is an open system and we know that

work done in steady flow $= -\displaystyle\int V dp$

or W = area ABFG

145. (A) As volume of system does not change, hence work done by system is zero.

154. (C) $\eta = 0.75 = 1 - \dfrac{T_2}{T_1}$

$$COP = \frac{T_2}{T_1 - T_2} = \frac{1}{\dfrac{T_2}{T_1} - 1}$$

$$= \frac{1}{4 - 1} = \frac{1}{3} = 0.33$$

167. (C) Presence of oxygen in boiler feed water causes corrosion and pitting. Dissolved oxygen can be removed either by chemical treatment with sodium sulphite or by deaeration.

168. (C) In a fire tube boiler, the flames and hot gases pass through the tubes which are surrounded by water. Lancashire boiler is a stationary, horizontal, natural circulation fire tube boiler having two flue tubes and three passes.

172. (D) $A_1V_1 = A_2V_2$

$$V_2 = \frac{A_1}{A_2}V_1$$

$$V_2 = \frac{36}{144}V_1 = \frac{V_1}{4}$$

we get

$$h_e = \frac{1}{2g}\left(V_1 - \frac{V_1}{4}\right) = \frac{9}{16}\frac{V_1^2}{2g}$$

174. (D) Venturimeter is known as rate meter. It is a device used for finding out the discharge.

175. (C) For velocity potential function to exist the flow must be irrotational since the continuity equation has to be satisfied.

182. (A) Maximum heat is carried away be chip. (80% of the total heat generated).

183. (D) Straddle milling is a special form of Gang milling where only side and face milling cutters are used.

185. (B) In down milling, also called climb milling, the feed direction of the workpiece is same as that of the cutter rotation.

186. (C) Spot facing is similar to counter boring, but removes only a very small portion of material around the existing hole to provide a flat surface square to the hole axis. This is normally done to provide a bearing surface for a washer or a nut or the head of a bolt.

190. (A) Centre-less grinding is used for grinding cylindrical workpieces without actual fixing the workpiece.

191. (B) The relative velocity must be tangential to the blade at entry to cause the least amount of disturbance to flow. Further for maximum efficiency, the fluid should leave the blade with zero swirl velocity. This implies that the angle of absolute velocity vector at the outlet is 90 degree, i.e., radial discharge at outlet.

197. (C) The degree of reaction is defined as the ratio of pressure energy change inside the runner to the total energy transfer. In a pure impulse turbine, there is no change of static pressure inside the runner and the degree of reaction is zero.
 * For a Francis turbine,
   $0 < R < 1$
 * For a Kaplan turbine,
   $0.5 < R < 1$
   The specific speed of a turbine increases with increase in degree of reaction.