Answer-key & Solution

SSC JE (Mechanical)
MOCK -(101)
Date 10.6.2017

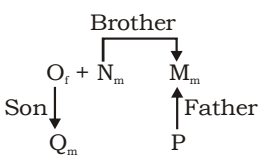|							
1. C	26. B	51. B	76. B	101. C	126. A	151. B	176. C
2. C	27. A	52. B	77. C	102. A	127. B	152. B	177. A
3. D	28. A	53. C	78. A	103. B	128. A	153. B	178. B
4. A	29. B	54. C	79. A	104. D	129. B	154. A	179. C
5. D	30. B	55. C	80. D	105. C	130. D	155. D	180. C
6. A	31. A	56. B	81. B	106. B	131. A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

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

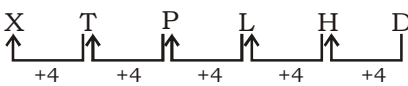**Note :** *If you face any problem regarding result or marks scored, please contact : 9313111777*

SOLUTION SSC JE (Mechanical) MOCK TEST no. 101

1. (C) As, $(1)^2 = 1$
   Similarly, $(125)^2 = \mathbf{15625}$

2. (C) People of India are called Indian and People of Holland are called Dutch.

3. (D) As, $\dfrac{462}{21} = 22$

   Similarly, $\dfrac{525}{21} = \mathbf{25}$

4. (A) Tajmahal is in Agra and Eiffel Tower is in Paris.

5. (D) In others, second number is divisible by first number.

6. (A) Other items are prepared from milk.

7. (A) In others, the difference of the numbers is divisible by 3.

8. (D) $\dfrac{4}{24} = \dfrac{1}{6} = \dfrac{23}{138} \neq \dfrac{25}{148}$

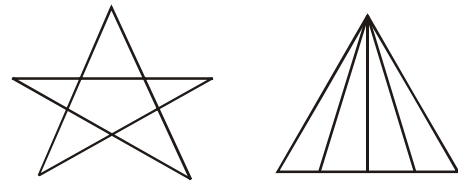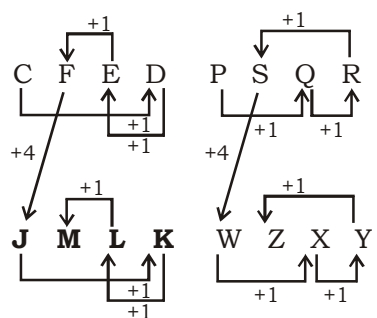9. (C)

   So, A is in North-East of D.

10. (A) Page $\rightarrow$ Books $\rightarrow$ Bookshelf $\rightarrow$ Library
       (3)   (2)   (1)   (5)
      $\rightarrow$ School
        (4)

11. (D)

12. (A) The colour of turmeric is 'yellow' and as it is given that 'yellow' is called 'sky'.
    So, the colour of turmeric is 'sky'.

13. (A) After drawing the relational diagram, we have,

    Clearly, we can say that Q is the cousin of P.

14. (B) The given series is

15. (B) The given series is
    $1^3 - 1 = 0$, $2^3 - 1 = 7$, $3^3 - 1 = 26$, $4^3 - 1 = 63$,
    $5^3 - 1 = 124$, $6^3 - 1 = 215$

16. (B)

Top	6	3	5
Opposite	2/6	4	1

   Here, digit 4 is opposite to 3.

17. (B) p q q q / p q q q / p q q q

18. (B) $\sqrt{36} - \sqrt{4} + \sqrt{25} = 6 - 2 + 5 = 9$
    $\sqrt{9} - \sqrt{49} + \sqrt{64} = 3 - 7 + 8 = \mathbf{4}$
    $\sqrt{25} - \sqrt{9} + \sqrt{36} = 5 - 3 + 6 = 8$

19. (B) $3 = \sqrt{49 - 40}$
    $4 = \sqrt{64 - 48}$
    $5 = \sqrt{49 - 24}$

20. (D) $(5)^2 + (4)^2 = 41$
    $(6)^2 + (9)^2 = 117$
    $\therefore (2)^2 + (5)^2 = \mathbf{29}$

21. (D) As,
    P U N C T A L E
    4 7 8 1 9 6 5 3
    So,
    T U N E L P
    9 7 8 3 5 4

23. (A)

    10 Triangles   10 Triangles

    $\left(4 \times \dfrac{5}{2}\right) = 10$

    $\therefore$ Required difference = $10 - 10 = 0$

25. (C) I $\rightarrow$ G R M
    II $\rightarrow$ M A S
    From I and II, we have
    G $\rightarrow$ R $\rightarrow$ M $\rightarrow$ A $\rightarrow$ S
    So, Sangeeta was last in the race.

26. (B)

27. (A) As, $23^2 + 23 = 552$ Similarly, $26^2 + 26 = 702$

28. (A) As, $\dfrac{6^3+6^2}{3} = \dfrac{216+36}{3} = \dfrac{252}{3} = 84$

   Similarly, $\dfrac{8^3+8^2}{4} = \dfrac{512+64}{4} = \dfrac{576}{4} = 144$

29. (B) National fruit of India is Mango and National fruit of New Zealand is Kiwifruit.

30. (B) Except 91, others are prime number.

31. (A) Except (23-48), in other options second number is divisible by sum of the digits of the first number.
   2 + 3 = 5 and 48 is not divisible by 5.
   3 + 1 = 4 and 52 is divisible by 4,
   2 + 5 = 7 and 42 is divisible by 7,
   2 + 1 = 3 and 18 is divisible by 3.

32. (B) Except Brigadier, others are related to navy.

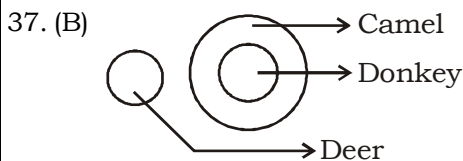33. (C) Except Guwahati, others are state capital.

34. (A) Father of Raju's daughter's father → Raju's father.
   Hence, the person is the brother of Raju's father.
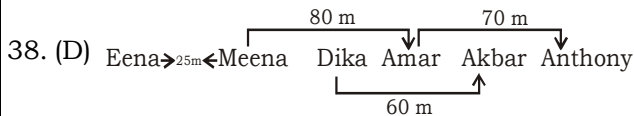   Therefore, Raju is the nephew of that person.

35. (B) The correct order is : Mars → Jupiter → Saturn → Uranus → Neptune

36. (B) Diamond and Graphite are Allotropes of carbon.

37. (B)

   1. ✘   2. ✘   3. ✔   4. ✘
   Hence, only conclusion (3) follows.

38. (D)

   Required distance = 25 + 80 + 60 = 165 m

39. (A) $3 + 1^2 = 4$, $4 + 2^2 = 8$, **$8 + 3^2 = 17$**,
   $17 + 4^2 = 33$, $33 + 5^2 = 58$, $58 + 6^2 = 84$

40. (C) The letters remain the same i.e. ABC and The numbers follow this series :
   111, 122, 133, 144, 155.

41. (B) Hence from the below mention block diagram, it is clear that B is the letter which is opposite to face E.

Top face	A	B	F
Bottom face	A	E	C

42. (C) pqrrpq / qrppqr / pqrrpq

43. (A) 16 × 7 – 29 = 112 – 29 = 83
   19 × 9 – 82 = 171 – 82 = 89
   24 × 3 – 15 = 72 – 15 = **57**

44. (B) $\sqrt{36\times64} = 6 \times 8 = 48$
   and $\sqrt{25\times9} = 5 \times 3 = 15$
   Therefore $\sqrt{81\times169} = 9 \times 13 = $ **117**

45. (A) 18 + 23 + 58 = 23 + 48 + 28 = 35 + 34 + **30**
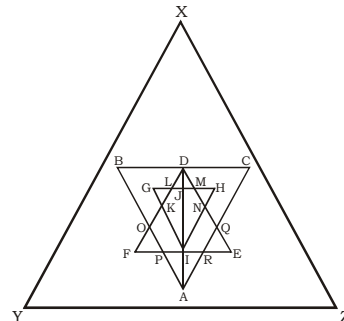   The sum in each case = 99.

46. (A) Given: 4 + 3 × 12 – 3 ÷ 2
   After interchanging the signs we have,
   = 4 × 3 – 12 ÷ 3 × 2
   = 4 × 3 – 4 × 2
   = 12 – 8 = 4

47. (C) The figure may be labelled as shown.

   Larger triangle is XYZ i.e. 1 in number.
   Simple triangles are GLK, DLJ, DJM, HMN, QRE, IRA, IPA and FPO i.e. 8 in number.
   Triangles having two components are BDO, CDQ, DLM, PRA, KFI, NEI, HJI, GJI, DKI and DNI i.e. 10 in number.
   Triangles having four components are DIE, DFI, DOA, DQA and GHI i.e. 5 in number.
   Triangles having six components are DCA and DBA i.e. 2 in number.
   DEF is the only triangle having eight components.
   ABC is the only triangle having twelve components.
   Thus, there are 1+ 8+10+ 5 + 2+1 + 1 = 28 triangles in the figure.

50. (B)

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      1  2  4
   ×     2  6
   ---------
      7  4  4
   2  4  8
   ---------
   3  2  2  4
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51. (B) Jain Doctrine is "established" upon an undying universal truth. It was Rishabh Dev, who first thought to realize the truth and achieve Kaivalya Gyan.

52. (B) According to 93rd Amendment, every child of the age group of 6-14 years shall have right to free and compulsory education. No child is liable to pay any kind of fee/ capitation fee/ charges. A collection of capitation fee invites a fine up to 10 times the amount collected.

53. (C) The coal found in India is mainly of non-coking quality and hence coking coal has to be imported. 70% of the steel produced today uses coal. Coking coal is a vital ingredient in the steel making process.

54. (C) FORTRAN (Formula Translation) is one of the earlier High Level programming languages used to write scientific applications. It was developed by IBM in 1956.

55. (C) He was defeated by his nephew, Farrukh Siyar with the help of Sayyid Brothers.

57. (B) G. V Mavalankar (1952-56), Hukum Singh (1962- 67); K.M. Munshi and U.N. Dhebar were never the Speakers of the Lok Sabha.

58. (B) The Gujarat cricket team won their first-ever Ranji Trophy title in the 2016-17 season after defeating Mumbai by 5 wickets in the final at the Holkar stadium in Indore, Madhya Pradesh. The 2016-17 Ranji Trophy was the 83rd season of the Ranji Trophy, the premier first-class cricket tournament in India.

59. (C) Dolby B and C are the noise reduction circuits developed by Dolby laboratories. Dolby noise reduction has made it possible to protect the music from tape noise, and helped make cassette the most popular audio product ever devised.

60. (D) The Servants of India Society was formed in Pune, Maharashtra, on June 12, 1905 by Gopal Krishna Gokhale. All are related to this organization.

62. (A) The Water (Cess) Act, 1977 related to water and irrigation and not the protection of environment.

63. (B) The committee under the chairmanship of professor Timothy Gonsalves has recently recommended reservation for girl students in IITs to address the issue of slump in the number of female students entering the prestigious institutes. The recommendation of the committee will be taken up in the meeting of the Joint Admission Board (JAB) for a final decision, which will decide whether the reservation will come in effect from 2017 or from 2018. The number of seats for male candidates will not be affected and this will help IITs achieve the one lakh target by 2020. Also, only candidates who have already qualified in JEE-Advance will be considered.

64. (D) For a body in projectile motion
Maximum height

$$= \frac{(\text{Initial velocity})^2 (\text{sin of launch angle})^2}{2(\text{Acceleration due to gravity})}$$

Maximum height $y_{max} = \dfrac{v^2 \sin^2 \theta}{2g}$

Thus, according to above equation greater the initial inclination. The greater is the height reached.

65. (B) Jupiter takes 11.8618 Earth years to complete a single orbit of the Sun. In other words, a single Jovian year lasts the equivalent of 4,332.59 Earth days.
Mercury takes just 87.97 days,
Venus takes just 267 days,
Earth takes just 365.26 days,
Mars takes just 686.98 days,
Saturn takes just 10,755.7 days,
Uranus takes just 30,687.15 days,
Neptune takes just 60,190.03 days.

67. (B) Indirect taxes are the charges that are levied on goods and services. Some of the significant indirect taxes include Value Added Tax, Central Sales Tax, Central Excise Duty, Customs Duty, stamp duties and expenditure tax. Property tax, Corporation tax and Wealth tax are examples of direct taxes.

68. (A) Natarajan Chandrasekaran, the Chief Executive Officer (CEO) and Managing Director (MD) of TCS, has been appointed as the new chairman of Tata Sons. He is the first non-Parsi chairman of Tata Sons and will take charge from Feb 21, 2017. His appointment comes after the Tata sons removed Cyrus Mistry as the Chairman. Chandrasekaran is only the third non-Tata after Nowroji Saklatwala and Cyrus Mistry to be named as Tata Sons' chairman.

69. (B) In a parallel circuit, the voltage across

each of the components is the same, and the total current is the sum of the currents through each component. The wiring for most homes is parallel. In parallel circuit each branch receives equal current. If one branch in the circuit is broken, electric current will still flow in other branches.

70. (A) The largest coral reef is the Great Barrier Reef, located just off the north-eastern coast of Australia. The 1200 mile (1900 km) long reef is protected as a Marine Park.

72. (C) This all happened from 1975-78 during fifth five year plan, the period of which is (1974-78).

73. (A) Recently, the Airtel Payments Bank has officially launched its nationwide operations in all 29 states of India. It is the India's first payments bank and is a fully-digital and paper-free bank. In it, the accounts will be opened by using e-KYC for which customers' Aadhar number will be required. The bank is offering a 7.25% interest rate on savings accounts deposits and free personal accidental insurance cover of Rs. 1 Lac on every saving account. One can access the banking services by installing MyAirtel app on their smartphone or by registering online through Airtel site.

75. (B) Mekong - Ganga Cooperation (MGC) was established on November 10, 2000 at Vientiane in the First MGC Ministerial Meeting. It comprises six Member countries namely, India, Thailand, Myanmar, Cambodia, Laos and Vietnam. They emphasised four areas of cooperation, which are tourism, culture, education, and transportation linkage in order to be solid foundation for future trade and investment cooperation in the region.

76. (B) Painted Greyware belonged to later Vedic period (1000-600BC). Ajanta paintings belong to the Gupta period. Pahari School came into existence during the Mughal period.

77. (C) The mixing of warm and cold current in the region where planktons food for fishes are found makes the temperature just right for them to survive. The temperature is just right for the growth of fresh food called planktons.

78. (A) Best answer is 1, 2. Because only Inter State Council is a constitutional body under article 263. So option 3 should not be included.

80. (D) Decibel is widely known as a measure of sound pressure level, but it is also used for a wide variety of other measurements in science and engineering. Decibel is commonly used in acoustics to quantify sound levels relative to a 0 dB reference which has been defined as a sound pressure level of .0002 microbar. The noise level of 100 decibel would corresponds to noise from a machine shop.

81. (B) The six elements in column 2 of the Periodic table are called Alkaline Earth Metals. These include Beryllium (Be), Magnesium (Mg), Calcium (Ca), Strontium (Sr), Barium (Ba), and Radium (Ra).

82. (D) Normal body temperature of human is 37° C, but when we convert 37° C into Kelvin it becomes 310 K, because
0° C = 0°C + 273 = 273 K
37° C = 37° + 273 = 310 K

83. (C) The Indian Ocean Rim Association (IORA) member-States has recently finalised MoU for cooperation in Small and Medium-sized Enterprises (SME) sector in New Delhi. Around 29 delegates from 14 IORA attended the 2-day workshop to finalise the MoU. The member countries agreed to have a common MoU to help each other in the development in SMEs in the region. The focus areas of the MoU are to finalise linkages and alliances amongst SMEs organizations, associations and various institutions engaged in SME development in their countries. The IORA is an international organisation consisting of coastal states bordering the Indian Ocean. It is a regional forum, tripartite in nature, bringing together representatives of Government, Business and Academia, for promoting co-operation and closer interaction among them. The headquarters of the IORA is located at Ebene city, Mauritius.

84. (C) The Bihar government has recently launched a Nasha Mukti campaign to make the state addiction-free with formation of over 11,000 km long human chain across the state. The human chain covered all panchayats of the state and over two crore people participated in this human chain.

85. (A) First schedule contains names of the States and UTs, that's why it should be amended, if a new state is created.

86. (D) Qutbud-din Aibak died after a fall from his horse while playing chaugan (polo) in 1210. He was succeeded by Aram Shah. Qutbud-din Aibak was the founder of first independent Turkish kingdom in Northern India in 1206.

87. (B) Mestizo is a type of person with mixed racial ancestry, especially of mixed European and Indian ancestry.

88. (A) BCD is a binary coded notation in which each of the decimal digits is expressed as a 8-bit binary numeral. For example in binary coded decimal notation 1 is 0001 and 2 is 0010 in pure binary.

91. (C) Xenon is called the 'stranger' gas. This gas is very unreactive and heavier than air, that was why named strange (in Greek it means 'xenon' means strange).

92. (D) Dugong is a large marine mammal. Dugong has a fusiform body with no dorsal fin or hind limbs, instead of possessing paddle. Dugong is heavily dependent on seagrass for subsistence. Dugong bear one calf at a time after an approximately 13 month gestation.

93. (A) The National Voters' Day is celebrated every year in India on January 25 every year to mark the foundation day of Election Commission of India (ECI). The significance of this day is to encourage youngsters, who have reached the age of 18, of the country to participate in the electoral process, by enrolling or registering themselves in electoral rolls and to exercise their franchise.

94. (B) Leader : Jhansi - Rani Laxmibai; Lucknow - Begum Hazrat Mehal; Jagdishpur (Bihar)- Kunwar Singh.

95. (B) For proper ecological balance 33% of forest land is recommended, but in India we have only 20.14% of forest coverage.

99. (C) Insulin is a peptide hormone composed of 51 amino acids. Insulin is secreted from Pancreas (Islets of Langerhans).

100. (C) The book "60 Indian Poets" has been authored by Jeet Thayil, which is pure pleasure put together with a poet's love of his craft and its masters. The book spans 55 years of Indian poetry in English and bridged continents and generations, and seeks to expand the definition of 'Indian-ness'.

104. (D) Strain = $\dfrac{\Delta L}{L}$

ΔL - deformation

∴ According to formula of strain, deformation (ΔL) produced per unit length (L) is known as strain.

106. (B) According to Hook's law upto ELASTIC LIMIT stress is directly proportional to strain i.e. $\boxed{\sigma \propto e}$ → upto elastic limit

108. (B) Given E = 125 Gpa (Young modulus)

μ = 0.25 (Poisson Ratio)

Knows that E = 2G (1+μ)

125 = 2× G (1+ 0.25)

125 = 2G (1.25)

$\dfrac{125}{2.5} = G$

G=50 GPa

Where, G = Modulus of rigidity

138. (A) Petrol engine works on otto cycle.

139. (B) D = 120 cm = 1.2 m

N = 3000 r.p.m.

Velocity of blade

$V_b = \dfrac{\pi DN}{60} = \dfrac{\pi \times 1.2 \times 3000}{600} = 189 m/s$

Blade velocity ratio = 0.42

Inlet velocity of steam

$= \dfrac{Blade\,velocity}{Blade\,Speed\,Ratio} = \dfrac{189}{0.42} = 450 m/s$

140. (A) The entropy of the universe is continually on the increase.

145. (D) Improper design of the die is the main cause of Improper grain flow.

147. (D) Drilling, Milling and Turning is three dimensional and is normally termed oblique cutting.

184. (C) (p - p$_o$) = Gauge pressure

p = pressure of the system

p$_o$ = atm pressure

186. (D) Poise is the unit of dynamic viscosity.

196. (A) d = 20 cm

kinematic viscosity. v = 0.0101 stock

R_N = 2320

$R_N = \dfrac{ud}{v}$

$2320 = \dfrac{u \times 20}{0.0101} = 1.117 cm/s$