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Answer-key & Solution

**SSC JE (Mechanical)
MOCK -(134)
Date:- 17.2.2018**

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

Note : If your opinion differ regarding any answer, please message the mock test and Question number to 9821756838

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

SOLUTION SSC JE (Mechanical) MOCK TEST no. 134

1. (A) Second can be obtained by moving 135° in clockwise direction from first.
2. (C) $18 \Rightarrow \frac{18^2}{2} = 162$ and $22 \Rightarrow \frac{22^2}{2} = 242$
3. (D) Dividing the first number by 7 will give the second number.
4. (B) The first two letters are written in reverse order and third letter is same.
5. (B) Australia is a continent whereas others are countries.
6. (D) Sum of digits in each number **except (D)** is 25.
7. (A) In all other pairs the ratio is **1 : 3**.
8. (C) Only '**U**' is the vowel.
9. (B) **2, 4, 3, 1**
10. (A) After exchanging the signs we have,
Given expression = $\frac{(18-3) \div 5 - 1}{5 \times 4 - 3 \times 7 + 2} = \frac{3-1}{22-21} = 2$
11. (B) $\sqrt[3]{64} = 4$ & $4 \times 12 = 48$
 $\sqrt[3]{8} = 2$ & $2 \times 13 = 26$
 $\sqrt[3]{27} = 3$ & $3 \times 3 = 9$
12. (C) Continuous prime numbers are written in three Columns.
So, **? = 17**
13. (A) $9 + 8 = 17$ and $2 \times 17 = 34$
 $11 + 13 = 24$ and $4 \times 24 = 96$
 $6 + 3 = 9$ and $12 \times 9 = 108$
14. (B) From the four dies, we have concluded that digits 3, 6, 1 and 5 appear adjacent to 4. Clearly, there will be **2** on the face opposite to 4.
15. (D) PET = **OPQDEFSTU**
SIT = **RSTHIJSTU**
16. (B) ECONOMIST
17. (A) Each number is 13 times of a prime number starting from 7.
So, result = $13 \times 19 = 247$
18. (B) The sequence is-
 $1 \times 2, 2 \times 3, 3 \times 4, 4 \times 5, 5 \times 6, 6 \times 7$
 \therefore Required answer = $4 \times 5 = 20$
19. (C) The word is 'BIOLOGY'.
20. (D) 'Train' starts with letter T and next letter to it is U.
'Bus' starts with letter B and next letter to it is C.
'Car' starts with letter C and next letter to it is D.
'Elephant' starts with letter E and next letter to it is **F**.
21. (D) Boy's maternal uncle will be brother of boy's mother. Maternal uncle of mother's brother and maternal uncle of woman are

- brothers which means woman is sister of mother's brother i.e., woman is the mother of the boy. So, the boy is woman's son.
22. (D) Only conclusion I follows.



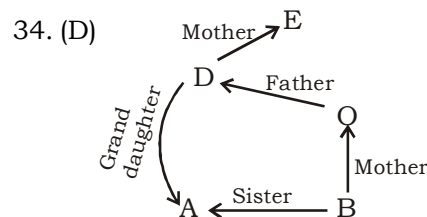
26. (A) $78 \Rightarrow 7 \times 8 = 56 \Rightarrow \frac{56}{2} = 28$

$84 \Rightarrow 8 \times 4 = 32 \Rightarrow \frac{32}{2} = 16$

27. (B)

M	N	C	O	P	O	R	S
1	2	3	4	1	2	3	4
N	C	O	M	O	R	S	P
2	3	4	1	2	3	4	1

28. (B) Physics is related to science and History is related to **Social science**.
29. (B) $34 \Rightarrow 3^4 = 81$
 $25 \Rightarrow 2^5 = 32$
30. (D) $328 \Rightarrow 8^2 \times 3 = 64 \times 3 = 192 \Rightarrow 328 - 192$
 $215 \Rightarrow 5^1 \times 2 = 10 \Rightarrow 215 - 10$
 $342 \Rightarrow 2^4 \times 3 = 16 \times 3 = 48 \Rightarrow 342 - 48$
 $235 \Rightarrow 5^3 \times 2 = 125 \times 2 = 250 \neq 258 \Rightarrow 235 - 258$
31. (C) Except **Anil Kapoor**, others are from the same family group.
32. (A) Except PQRS, in others atleast one vowel is present.
33. (D) **256** is the only number for which cube root is not possible.



35. (D) Neither conclusion (1) nor (2) follows
36. (D) $12 \times 18 = 24 \times 9, 16 \times 24 = 8 \times 48,$
 $15 \times 8 = 24 \times 5$

37. (B) $83 \Rightarrow 8^3 = 512 \Rightarrow \frac{512}{2} = 256$

$42 \Rightarrow 4^2 = 16 \Rightarrow \frac{16}{2} = 8$

$63 \Rightarrow 6^3 \Rightarrow 216 \Rightarrow \frac{216}{2} = 108$

38. (B) $12 \times 6 + 18 \times 4 = 144 \Rightarrow \sqrt{144} = 12$

$18 \times 8 + 36 \times 5 = 144 + 180 = 324 \Rightarrow \sqrt{324} = 18$

$5 \times 8 + 10 \times 6 = 40 + 60 = 100 \Rightarrow \sqrt{100} = 10$
39. (D)

40. (D) As, we can see 2 R's in the word **RIVER**, which is not present in the given word **ENVIRONMENT**.

41. (C) $2 \times 1 + 3 = 5$
 $5 \times 2 + 6 = 16$
 $16 \times 3 + 9 = 57$
 $57 \times 4 + 12 = \mathbf{240}$

42. (D) $8 + \frac{8}{2} = 12, 12 + \frac{12}{2} = 18, 18 + \frac{18}{2} = 27,$

$27 + \frac{27}{2} = \mathbf{40.5}$

43. (A) $12 \xrightarrow{\times 2} 24 \xrightarrow{\times 3} 72 \xrightarrow{\times 4} 288 \xrightarrow{\times 5} \mathbf{1440}$

44. (B) 5, 2, 3, 1, 4

45. (D) PQRS/PSQR/PRSQ/PQR

46.(B) After changing the signs, we have

$$\frac{52 - 8 \times 6 \div 2}{16 + 12 \div 6 \times 3 - 18} = \frac{52 - 8 \times 3}{16 + 6 - 18}$$

$$= \frac{52 - 24}{4} = \frac{28}{4} = \mathbf{7}$$

47. (B)

48. (A)

$A = 1^2 + 1 = 2, B = 2^2 + 2 = 6, C = 3^2 + 3 = 12,$
 $D = 4^2 + 4 = 20, E = 5^2 + 5 = 30, F = 6^2 + 6 = 42$
and $G = 7^2 + 7 = 56$
then, $F+B+G = 42+6+56 = \mathbf{104}$

50. (B) 89, 33, 57, 43

F A R E

51. (C) Agriculture was the main occupation of the Indus Valley people. Crops such as wheat, barley, peas and bananas were raised. In the olden days, there was enough rain in that region and occasional floods brought a great deal of fertile soil to the area. People used to plough the land with wooden ploughshares drawn by men and oxen. From the existence of granaries it is concluded that there were surplus food-grains.

52. (A) Philippine Sea is the largest Sea in the world with reference to the surface area. The Philippine Sea is a marginal sea and a part of the North Pacific Ocean.

The 10 largest seas by surface area are the Philippine Sea, the Coral Sea, the Arabian Sea, the South China Sea, the Weddell Sea, the Caribbean Sea, the Mediterranean Sea, the Tasman Sea, the Bering Sea and the Bay of Bengal.

53. (A) Article 222 empowers the President to transfer judges from one High Court to another. Clause (2) of this article goes on to provide that when a judge is transferred

he shall be entitled to receive a compensatory allowance in addition to his salary. It is felt that there is no real justification for granting such an allowance and it is accordingly proposed to omit clause.

54. (C) Public-private partnership (PPP) is a funding model for a public infrastructure project such as a new telecommunications system, airport, and power plant. The public partner is represented by the government at a local, state and/or national level. The private partner can be a privately-owned business, public corporation or consortium of businesses with a specific area of expertise.

55. (B) Density of gold is 19.30 g/cm³. The density of ultra pure liquid mercury is 13.534 g/cm³ and the density of steel is 7.80 g/cm³.

56. (B) The chemical formula for sodium bicarbonate is NaHCO₃. The common name of this substance is baking soda, and its chemical name is sodium hydrogen carbonate. Sodium bicarbonate is a leavening agent that's commonly used in baking. Although inactive in its dry form, mixing it with an acid and liquid causes a chemical reaction that releases a gas.

58. (C) The National University of Singapore (NUS) has topped the full list of the top 300 institutions in the Times Higher Education (THE)'s Asia University ranking 2017. From India, Indian Institute of Science (IISc) Bangalore ranked at 27th while IIT Bombay secured 42nd rank. For the first time, India has become the 3rd most-represented nation with 33 universities in the ranking.

59. (A) The Chief Minister of Assam, Sar-bananda Sonowal has recently launched initiatives to develop Majuli as India's first carbon neutral district and as a biodiversity heritage. Apart from this, Assam government has also launch "Forests are Lives" campaign to celebrate the importance of Assam's rich forest and biodiversity.

60. (C) One can use the MAX function to find the highest number in a series of numbers.

61. (D) Some titles for traditional Islamic leaders include Caliph, Imam, Sheikh, Mufti, Mujtahid and Allamah. The titles of "Ayatollah" and "Grand Ayatollah" exist only in the Shiite sect of Islam. Islamic religious leaders come in a variety of types due to the absence of an organized hierarchical structure, such as a church in Christianity. The Imam is the most popular leadership position in Islam. It denotes one who leads worship and offers advice within a community in the Sunni

- sect. The Shias, on the other hand, believe that Imams are descendants of Muhammad. Caliph refers to the supreme religious and political figure in a caliphate, a sovereign state encompassing the entirety of the Muslim nation, called the "Ummah.
62. (D) Duncan Passage is a strait in the Indian Ocean. It separates Rutland Island (part of Great Andaman) to the north and Little Andaman to the south. West of Duncan Passage is the Bay of Bengal. East is the Andaman Sea.
63. (A) Decorum means maintaining proper behaviour. Interpellation means formal right of a Parliament to submit formal question to the government. Crossing the floor means to vote against the party lines. Yielding the floor means the speaker giving part of his or her speaking time to another speaker. While this practice is allowed in some legislative bodies, it is not allowed in deliberative assemblies, unless specifically authorized in the rules.
64. (D) John McCloy was the Bank's President at that time when World Bank loan was received by France.
65. (A) Cloudy nights are warmer than clear nights because, the cloud cover provides a shield which act as an insulator and store up the heat radiated by the earth and do not permit heat to escape.
66. (B) Tritium is a radioactive isotope of hydrogen. The name of this isotope is formed from the Greek word "tritos" meaning "third".
68. (C) Roger Federer has won the 2017 ATP Indian Wells Masters title by defeating Stan Wawrinka in the final by 6-4, 7-5. With this win, Federer joined Novak Djokovic as the only man to win five Indian Wells titles. Earlier, he won this title consecutively three times between 2004 and 2006 and in 2012. At 35, Federer is the oldest ATP player to win one of the elite Masters titles, supplanting Andre Agassi who was 34 when he won in Cincinnati in 2004.
69. (C) Gandhiji's greatest contribution to the social thought of this century is perhaps his insistence on decentralization of the means of production (economic power). It is in the nature of large-scale industries to centralize economic power in the hands of a few individuals. Under capitalism this power comes to be concentrated in the hands of individual capitalists and under socialism, it is arrogated by managers, technocrats and bureaucrats.
70. (D) Cedar is found in Canada, Douglas fir is found in Mexico, Mahogany is found in Myanmar. Teak is found in Honduras.
71. (B) Political scientists speculate that proportional representation leads logically to multi-party systems, since it allows new parties to build a niche in the legislature.
73. (C) The word 'atmosphere' comes from the Greek 'atomos' meaning vapour and 'sphaira' meaning sphere. It is the mixture of gases that surround the sphere of the gases extending to a height of about 200km. The major gases in the atmosphere are nitrogen, oxygen, argon and carbon dioxide. It also contains minor or trace amounts of other elements in compounds like nitrogen and sulphur, hydrocarbons and particulates.
75. (C) Yogi Adityanath has been sworn-in as the 21st Chief Minister of Uttar Pradesh (UP). Apart from this, BJP's state unit chief Keshav Prasad Maurya and party's national vice president Dinesh Sharma also took charge as deputy chief ministers of UP.
76. (C) Vinayak Damodar Savarkar was an Indian revolutionary and politician. He wrote more than 10,000 pages in the Marathi language. When in the Cellular Jail, Savarkar was denied pen and paper, he composed and wrote his poems on the prison walls with thorns and pebbles, memorized thousand lines of his poetry for years till other prisoners returned home and brought them to India.
- 77 (B) Hazaribagh: Mica and Coal are the major minerals found in this district of Jharkhand.
- Neyveli: It was developed after mining of lignite started under the Neyveli Lignite Corporation (NLC) in 1956.
 - Jharia: It is famous for its rich coal resources used to make Coke.
 - Rourkela: They are rich in Iron Ores, Manganese, Dolomite and Limestone.
78. (C) The first Law Commission was established in 1834 under the Charter Act of 1833 under the Chairmanship of Lord Macaulay which recommended codification of the Penal Code, the Criminal Procedure Code and a few other matters. Thereafter, the second, third and fourth Law Commissions were constituted in 1853, 1861 and 1879 respectively.
79. (D) **In national accounts definitions**
 Personal disposable income = personal income – direct taxes

80. (B) Michael Faraday invented the first electric generator in 1831. This British chemist and physicist did extensive work in the field of electricity that paved the way for the inventions of the electric motor and transformer.
81. (D) Polonium is the most radioactive element. When Polonium is radioactive it glows blue, which is caused by excitation of the gas particles by radiation. A single milligram of polonium emits as many alpha particles as 5 grams of radium. It decays to release energy at the rate of 140 W/g. The decay rate is too high that it can raise the temperature of a half gram sample of polonium to over 500°C.
83. (A) The Satavahanas, were an Indian dynasty based on the Deccan region. The beginning of the Satavahana rule is 271 BCE to 30 BCE. Satavahanas dominated the Deccan region from 1st century BCE to 3rd century CE. Satavahanas minted their coins predominantly in lead.
84. (A) Srinath Narayanan from Chennai will soon become India's 46th Grandmaster after he defeated Spanish GM David Anton Guijarro at the 2017 Sharjah Masters chess tournament. He became India's youngest FIDE-rated player in 2002 when he was just 8 years old and also finished as joint winner in the Under-12 World Championship in 2005 in France. Srinath became an International Master at the age of 14 and crossed the 2500 Elo rating in 2016. He had already secured five GM norms.
85. (C) In photolithography, ultraviolet light is shined onto a photosensitive film on a piece of silicon to create a pattern of conducting and isolating layers as it breaks apart. The circuit is built up with many of these silicon layers and covered in metal. Finally, another photosensitive film is used to form a pattern for the wires. The silicon used in computer circuits is pure silicon crystal to ensure perfection. Silicon is used because it is a cheap and abundant semiconductor.
86. (C) Raja Todar Mal was a warrior, an able administrator and an exemplary finance minister. He was one of the 'Navratnas' of Akbar's courts. He introduced an excellent land revenue system. In 1582, the title Diwan-I-Ashraf was bestowed upon him by the Emperor.
89. (B) Finance Bill means a Bill ordinarily introduced every year to give effect to the financial proposals of the Government of India for the next following financial year and includes a Bill to give effect to supplementary financial proposals for any period. The Finance Bill is introduced immediately after the presentation of the Budget. The introduction of the Bill cannot be opposed.
90. (C) Mean fundamental frequency, which is associated with the perceptual notion of pitch, is commonly considered as the major difference between adult male and female voices. Pitch of a man's voice falls under low frequency, whereas woman's voice is of the high pitch type.
91. (D) Lithium is strongest Reducing agent because of lowest standard reduction potential. When something is oxidized, it reduces another substance, becoming a reducing agent. Hence lithium is the strongest reducing agent and Fluorine is the strongest oxidizing agent.
93. (B) Bob Dylan, the renowned US musician and poet, will finally accept his Nobel Literature Prize at a meeting with the Swedish Academy in Stockholm, Sweden in April 2017. He has become the first songwriter to win the prestigious award and the first American since novelist Toni Morrison in 1993.
94. (D) Rajatarangini ("The River of Kings") is a metrical legendary and historical chronicle of the north-western Indian subcontinent, particularly the kings of Kashmir. It was written in Sanskrit by Kashmiri Brahman Kalhana in 12th century CE. The Rajatarangini provides the earliest source on Kashmir that can be labelled as a "historical" text on this region.
95. (C) An equinox is the moment in which the plane of Earth's equator passes through the center of the Sun, which occurs twice each year, on 21st March and 23rd September.
97. (C) Economic liberalization is a very broad term that usually refers to fewer government regulations and restrictions in the economy in exchange for greater participation of private entities. The doctrine is associated with classical liberalism. The arguments for economic liberalization include greater efficiency and effectiveness that would translate to a "bigger pie" for everybody. Thus, liberalization in short refers to "the removal of controls", to encourage economic development.
100. (C) Montenegro is set to become the 29th member of the North Atlantic Treaty Organization (NATO) after US Senate ratify its entry into NATO. Though, ratification from Spain and the Netherlands is still pending ahead of a NATO summit in May 2017. The move was strongly opposed by Russia because it considers Montenegro

and other western Balkan states part of its sphere of interest. Thus, Russia opposes the Western military alliance's expansion in the Balkans. It must be noted that Montenegro was the former ally of Russia.

124.(D) $T_1 = T_2$

$$\left(\frac{G\theta I}{L}\right)_1 = \left(\frac{G\theta I}{L}\right)_2$$

$$\theta_1 D_1^4 = \theta_2 D_2^4$$

$$\frac{\theta_1}{\theta_2} = \left(\frac{D_2}{D_1}\right)^4$$

$$= 2^4$$

$$\frac{\theta_1}{\theta_2} = 16$$

132.(C) Maximum deflection of cantilever beam-

$$\delta = \frac{wL^3}{3EI}$$

or $\delta \propto \frac{w}{I}$

$$\delta \propto \frac{w}{d^3}$$

$$\frac{\delta_2}{\delta_1} = \left[\frac{w_2}{w_1}\right] \cdot \left[\frac{d_1}{d_2}\right]^3$$

$$= \frac{1}{2} \left[\frac{1}{2}\right]^3$$

$$\delta_2 = \frac{\delta_1}{16}$$

134.(A) $D = 15\text{cm}$

$$d = 1.5\text{ cm}$$

$$M = 10^3\text{ kg}$$

According to Pascal's law-

$$\frac{mg}{a} = \frac{Mg}{A}$$

$$m = M \left(\frac{a}{A}\right)$$

$$= 10^3 \left(\frac{1.5}{15}\right)^2$$

$$m = 10\text{ kg}$$

147.(A) Conservation of energy-

$$(P.E)_{\text{body}} = (P.E)_{\text{spring}}$$

$$Mg(h + \delta) = \frac{1}{2} K\delta^2$$

$$1000 \times 9.81(8 + \delta) = \frac{1}{2} \times 500 \times 9.81 \times \delta^2$$

$$\delta^2 - 4\delta - 32 = 0$$

$$\delta^2 - 8\delta + 4\delta - 32 = 0$$

$$\delta(\delta - 8) + 4(\delta - 8) = 0$$

$$(\delta - 8)(\delta + 4) = 0$$

$$\delta = 8\text{ cm}$$

152.(B) $C_V = 5$

$$\gamma = 1.4$$

$$C_p - C_v = C_v \left(\frac{C_p}{C_v} - 1\right)$$

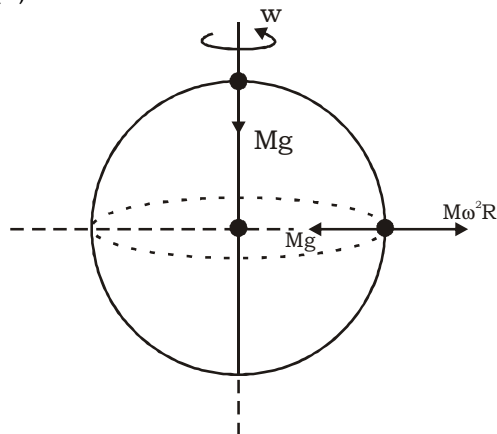
$$= 5(1.4 - 1)$$

$$= 5(0.4)$$

$$C_p - C_v = 2\text{ cal/mol K}$$

153.(C) Since work is conservative, so it doesn't depends upon the path traced by body only depends on initial and final position. Therefore work done is same for both cases.

156.(A)



I. When body at poles-

No centrifugal force component act on body.

$$\text{So, } g_{\text{apparent}} = g \quad \dots(i)$$

II. When body at equator-

Centrifugal force acted on body-

$$\Sigma F_x = Mg_{\text{apparent}}$$

$$Mg - M\omega^2 R = Mg_{\text{app}}$$

$$\text{So, } g_{\text{app}} = g - \omega^2 R \quad \dots(ii)$$

from equation (i) and (ii) clearly we can see that

$$(g_{\text{app}})_{\text{equator}} < (g_{\text{app}})_{\text{poles}}$$

153.(C) $D = 10\text{ cm}$

$$N = 420\text{ rpm}$$

$$\omega = \frac{2\pi N}{60}$$

$$= \frac{2\pi \times 420}{60}$$

$$= 43.98$$

$$\omega \simeq 44\text{ rad/s}$$

161.(A) $PV = nRT$

$$(600)\text{ V} = 1 \times 8.34 \times 300$$

$$V = 4.17\text{ m}^3/\text{kg.mol}$$