Answer-key & Solution

SSC JE (Mechanical)
MOCK -(127)
Date:- 16/ 12/ 2017

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

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*
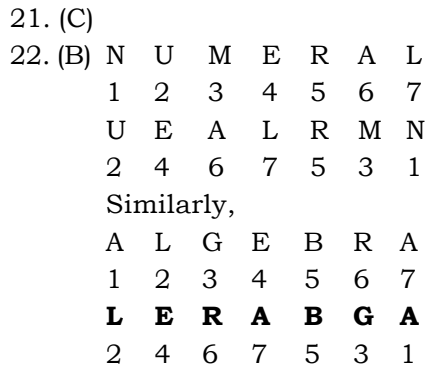
SOLUTION SSC JE (Mechanical) MOCK TEST no. 127

1. (D) A marathon is a long race and hibernation is a long period of **sleep**.
2. (C) A window has its cover called panes and a book has **covers**.
3. (B) We use a cup to have a coffee and bowl to have **soup**.
4. (B) A yard is a bigger unit of measurement of length than an inch (a yard contains 36 inches).
   A quartg is a bigger unit of measurement of weight than an ounce (a quart contains 32 **ounces**).
5. (A) An optimist expects good things to happen. While a pessimist lacks hope for the future. A pessimist is a person whose outlook is **gloomy**.
6. (C) A lizard is a type of reptile and a **daisy** is a type of flower.
7. (A) The relationship is $(x) : (x^3 + x^2)/4$
   $= 6 : (216 + 36)/4 = 6 : 63$
   and $4 : (64 + 16)/2 = 4 : \mathbf{20}$
8. (C) The relationship is $x^2 : (x + 1)$
   $= 11^2 : (11 + 1) :: 5^2 : (5 + 1) \Rightarrow 121 : 12 :: 25 : \mathbf{6}$

9. (B)

10. (A)
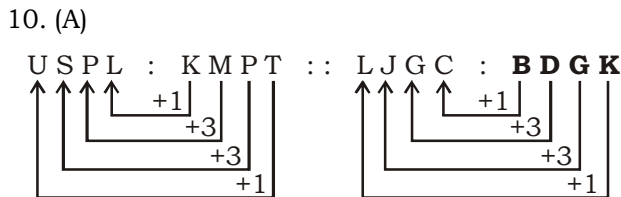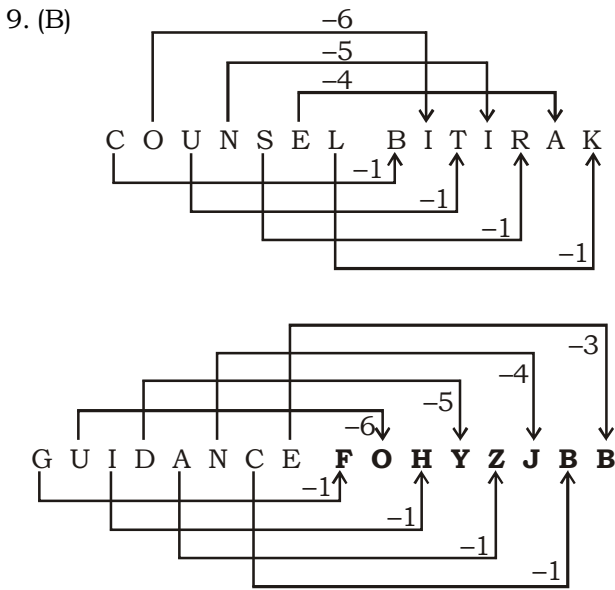
11. (A) In all except **seminar**, 'semi' indicates 'half'.
12. (C) All except **sodium** are radio isotopes, while sodium is a metal.

13. (B) All except **eczema** are related to eyes, while eczema is a skin infection.
14. (B) All except **Bridge** are different suits of a pack of card whereas bridge is a card game.
15. (D) All except **cortes** are currencies, while cortes is parliament of Spain.
16. (A) In each number except **751**, the difference of first and third digit is the middle one.
17. (C) Except **119**, others are prime numbers.
18. (D) After including the vowels, we can find the name of the months i.e. **A**pr**i**l, M**a**y, **A**u**gu**st. Whereas in J**a**nu**a**ry we have to include some consonant also i.e. 'N'.
19. (A) Triangle $1 \rightarrow 3^2 = 9$ and $4^2 = 16$ hence 916
   Triangle $2 \rightarrow 2^2 = 4$ and $5^2 = 25$ hence 425
   Similarly, $1^2 = 1$ and $7^2 = 49$
   Hence, 149 is the right answer.
20. (B) The letters are the first letter of counting numbers i.e. one, two, three, four, five etc. So, '**O**' is the right answer
21. (C)
22. (B)

N	U	M	E	R	A	L
1	2	3	4	5	6	7
U	E	A	L	R	M	N
2	4	6	7	5	3	1

Similarly,

A	L	G	E	B	R	A
1	2	3	4	5	6	7
L	**E**	**R**	**A**	**B**	**G**	**A**
2	4	6	7	5	3	1

23. (D) All the words except "**MOUTH**" are palindromes (reads the same from backward as well as forward).

24. (B)

25. (B)
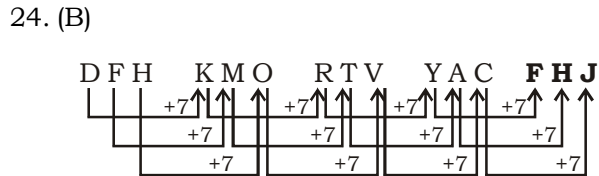
26. (B) Positions of the vowels A, E, I, O, and U are 1, 5, 9, 15 and **21** respectively.

27. (A)

28. (C) Here is how we get the sequence:-

$1049760/58320 = 18$

$58320/3888 = 15$

$3888/324 = 12$ **(we can observe a**

$324/36 = 9$ **difference of 3 in**

$36/6 = 6$ **each of the**

Then, $6/? = 3$ **obtained result.)**

$\Rightarrow ? = 6/3 =$ **2**

29. (D) P**A**ND**A**, T**OA**D and D**O**NK**E**Y are the animals which can be formed after including the vowels.

APPL**E** can also be formed after including vowels A & E but **Apple** is not an animal.

30. (A) Number of letters in the spelling of each digit i.e. Zero = 4, One = 3, Two = 3, Three = 5, Four = 4 and so on.

So, We have, **Ten = 3**

31. (A) Let the marks in Geography be G and History be H.

Eq 1: $G + H = 160$

Eq 2: $G/3 = H/2$

By the problem:

$G = 160 - H$

Therefore, putting the value of G in Eq 2:

$(160 – H)/3 = H/2$

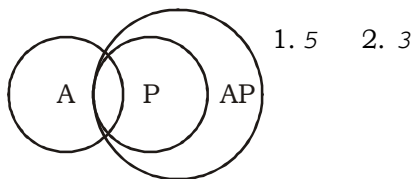$\Rightarrow 320 – 2H = 3H$

$\Rightarrow 3H + 2H = 320$

$\Rightarrow 5H = 320$

$\Rightarrow H =$ **64**

32. (A) Write the letters in four rows for example :

```
  A E N D F N D
  F N N I R D E  ⇒ A FRIEND IN NEED
  R D E S I I E    IS A FRIEND IN DEED
  I I E A E N D
```

33. (B)

1. *5*   2. *3*

34. (A)

35. (A) Given : S O I L   D I S K

$ 4 % 6   5 % $ #

Then, S O L I D

$ 4 6 % 5

36. (B) $J_o > K_i$ & C_a

$K_i > S_a$

$K_i > S_a > $ **N_a**

$C_a > S_a$

So, Nancy is the shortest among all.

37. (B) The first person shook hands with 11 remaining people, the second person also shook hands with 11 people, but we count 10, as the hand shake with the first person has already been counted. Similarly add 9 for the third person, 8 for the fourth one & proceeding in this fashion we get:

$11 + 10 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 66$

So, 66 handshakes took place before the meeting & 66 after the meeting.

So, the total no of hand shakes is **132**.

Shortcut: Put N = 12 and N (N – 1) is your answer. $\Rightarrow 12 (12 – 1) =$ **132**

38. (B) The antonyms is **excite**.

laz**e**

unla**x**

re**c**line

unw**i**nd

tranquilize

r**e**pose

39. (B)

Word	W I N T E R	S U M M E R	A U T U M N
Position	23 9 14 20 5 18	19 21 13 13 5 18	1 21 20 21 13 14
	+2 +3 +4 +5 +6	+2 +3 +4 +5 +6	+2 +3 +4 +5 +6
Given detail	23 11 17 24 10 24	19 23 16 17 10 24	1 23 23 25 18 20

40. (B)

1 ☎	2 abc	3 def
4 ghi	5 jkl	6 mno
7 pqrs	8 tuv	9 wxyz

With the reference of given keypad, after pressing the digit 4 twice we will get 'H', the digit 3 twice we will get 'E', the digit 5 thrice we will get 'L' and so on.

After pressing the code in the given pattern we will get "HELLO FRIENDS".

41. (C) Using the correct symbols, we have the given expression as

$20 + 8 – 8 \div 4 \times 2 = 20 + 8 – 2 \times 2$

$= 20 + 8 – 4 =$ **24**.

42. (C) The colour of the human blood is 'red'. As it is given that 'red' is called 'yellow'.

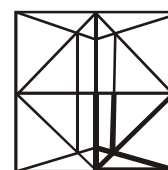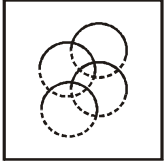So, the colour of human blood is 'yellow'.

43. (D)

44. (A)

45. (C)

46. (B)

47. (A) 1, 4 and 7 are quadrilaterals.
2, 5 and 8 are three-dimensional figures.
3, 6 and 9 are triangles.

48. (C)

49. (C) The third figure in each row comprises the parts common to the first two figures.

50. (C)

51. (D) Iron was the only metal unknown to the Aryans during the early Vedic age. The advent of iron is generally associated with the late or post-Vedic ages. So blacksmith did not exist during this period.

57. (A) There are certain constitutional functions which the President has to perform with respect to Parliament. The President of India has the power to summon and prorogue either of the two Houses of Parliament or to dissolve the Lok Sabha. While the Rajya Sabha is a continuing body, the power to dissolve the Lok Sabha vests in the President.

59. (A) Pune is on the leeward side of the western ghats and so lies on a rain shadow area. The South-west monsoon empties all moisture on the windward side of the mountain range and reaches Pune with less moisture after crossing the mountain range. But Mumbai lies on the windward side and hence experiences heavy rainfall.

61. (A) In 1942, although still committed in his efforts to launch a 'non-violent movement', Gandhi clarified that the Quit India Movement would not be stopped by individual acts of violence, saying that the "Ordered anarchy of the present system of administration was worse than real anarchy." He called on all Congress men and Indians to maintain discipline and given a slogan "Karo ya maro" (Do or die) in the cause of ultimate freedom.

65. (B) Rabi crops refer to agricultural crops sown in winter and harvested in the summer season. The term is derived from the Arabic word for "spring", which is used in the Indian Subcontinent. Rabbi season begins in autumn. The chief rabbi crops are wheat, barley, gram, pulses, linseed and mustard.

67. (D) Schedules are lists in the Constitution that categorize and tabulate bureaucratic activity and policy of the Government.
First Schedule (Articles 1 and 4)- This lists the states and territories of India, lists any changes to their borders and the laws used to make that change.
Twelfth Schedule (Article 243-W) – It Municipalities urban local government.

71. (C) Muhammad Ali Jinnah died at the age of 71 in September 1948, just over a year after Pakistan gained independence from the British rule. He died from tuberculosis.

74. (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.

75. (A) Nearness to source of raw materials is one of the key factors that guide the establishment of such industries as iron, steel and other metal industries. Besides, they are also found near the coal mines which are used in smelting processes.

77. (B) Dear Money is also known as tight money. It is the money which has to be borrowed at a high interest rate and so restricts expenditure by companies. This situation can be a result of a restricted money supply, causing interest rates to be pushed up due to the forces of supply and demand. Business may have a tough time raising capital during a period of dear money.

78. (B) Nicholas Kaldor's seminal work titled 'An Expenditure Tax' was brought out in 1955. Kaldor asked to levy a tax on a person's expenditure (consumption), instead of on his income. When expenditure is made on the basis of taxation, the problems created by the non-comparability of various types of accruals of wealth resolves themselves. This was his major argument in favour of an expenditure tax.

79. (B) The Telecom Regulatory Authority of India (TRAI) is the independent regulator of the telecommunications business in India. It was established on 20th February, 1997 by an act of parliament called "Telecom Regulatory Authority of India Act 1997."

80. (A) The Indian Constitution borrowed such features as parliamentary form of government, introduction of Speaker and his role, the concept of single citizenship, the Rule of law, procedure of law making etc from England. The Indian citizenship and nationality law and the Constitution of India provide single citizenship for all of India.

81. (C) The labour theory of property is a natural law theory that holds the property which originally comes about by the exertion of labour upon natural resources. In his Second Treaties on Government, the philosopher John Locke asked, by what right an individual can claim to own one part of the world. When according to the Bible, God gave the world to all humanity in common. He argued in support of individual property rights as "natural rights."

82. (A) Nalanda was an ancient centre of higher learning in Bihar. It was a Buddhist centre of learning from the fifth or sixth century CE to 1197 CE. Nalanda flourished between the reign of the Sakraditya (whose identity is uncertain and who might have been either Kumara Gupta-I or Kumara Gupta-II) who was supported by patronage from the Hindu Gupta rulers as well as Buddhist emperors like Harsha and later emperors from the Pala Empire.

83. (B) Kishwar Desai is an Indian author. Her first novel 'Witness the Night' won the Costa Book Award in 2010 for Best First Novel. Her latest novel 'Origins of Love' was published in June 2012. Both novels feature a feisty Indian middle-aged social worker Simran Singh, who gets involved in social problems and tries to find a resolution.

84. (D) The Jaduguda Mine is a uranium mine in Jaduguda village in the Purbi Singhbhum district of the Indian state of Jharkhand. It started operation in 1967 and was the first uranium mine in India. The deposits here were discovered in 1951. As of March 2012 India only possesses two functional uranium mines which also includes the Jaduguda Mine.

87. (D) Article 1 of the Constitution declares that India shall be a Union of States. The States and the territories thereof shall be as specified in the First Schedule and the territory of India shall comprise the territories of the States, the Union territories specified in the First Schedule and such other territories may be acquired.

88. (B) A Master of Computer Applications (MCA) is a postgraduate degree in computer application awarded in India. It is a three year (6 Semesters) course. The students entering MCA must have a bachelor degree with Mathematics as one of the subjects at higher secondary or graduation.

89. (D) The concept of opportunity cost is based on scarcity and choice. The opportunity cost of a commodity is the next best alternative commodity sacrificed. In other words, opportunity cost of a commodity is the opportunity to produce alternative goods and services. If one commodity is produced another commodity is scarified. So opportunity cost of producing a good is equal to the cost of not producing another commodity.

90. (C) The terabyte is a multiple of unit byte for digital information.
1 TB = 10^{12} Bytes
= 1073741824 Kilobyte
= 1048576 MB = 10^{12} Gigabytes

91. (C) An important function of the Reserve Bank of India is to act as Government banker, agent and adviser. The Reserve Bank is an agent of Central Government and of all State Governments in India except J&K. State Government transactions are carried out by RBI in terms of the agreement entered into with the State Governments by section 21A of the Reserve Bank of India Act. 1934.

92. (D) The presence of Mongoloid groups in North-East India had been attested as early as circa 500 BC in ancient Indian literature. The diverse Mongoloid groups which eventually settled in different habitats and ecological settings crystallized into distinct tribal societies.

93. (B) Bara Imambara is an imambara complex in Lucknow built by Asaf-ud-Daulah (Nawab of Lucknow) in 1784. It is also called the Asafi Imambara. Bara means big and an imambara is a shrine built by Shia Muslims for the purpose of Azadari.

94. (B) The Department of Earth Sciences (University of Kashmir) was awarded with the Best Research award in Earth Sciences at the Centenary year of Indian Science held at the Calcutta University from 3-7 January 2013.

95. (B) Assembler is a computer program which is used to translate program written in Assembly Language into machine language. The translated program is called as object program.

97. (B) 'Sarfaroshi ki Tamanna' is a patriotic poem in Urdu written by Pandit Ram Prasad Bismil. He was an Indian Independence Movement leader known popularly with Kakori Train Robbery during British rule in India. The poem was written as an ode to young freedom fighters of the Indian independence movement. It has also been associated with the younger generation of inter-war freedom fighters such as Ashfaqullah Khan, Shaheed Bhagat Singh and Chandrashekhar Azad.

99. (B) Investment expenditure refers to the creation of new assets i.e. an addition to the stock of existing capital assets. According to Keynes, investment demand depends upon two factors -

   (a) Expected rate of profit - It is also called as Marginal Efficiency of Capital (MEC). Investment demand increases with the increase in the expected rate of profit.

   (b) The rate of interest (IR):- Investment demand decreases with the increase in the rate of interest.

102. (B) $F = \rho AV^2 = (0.7 \times 1000) \times 0.03 \times 10^2$

   $= 2100$ N $= 2.1$ kN

104. (B) In a modern Francis turbine, the water enters the runner radially and leaves axially, and accordingly it is a mixed-flow type turbine.

107. (B) Specific speed is a characteristic index number which serves to identify the type of turbine.

   For a Pelton wheel

   Ns = 10 to 25 for a single jet

   = 50 for a double jet

   For a Francis turbine : Ns = 50 to 300

   For a Kaplan turbine : Ns = 300 to 100

109. (A) Unit power of the turbine

   $$P_u = \frac{P}{H^{3/2}} = \frac{640}{(16)^{3/2}} = 10 \ kW$$

132. (C) pressure P_A at point A = $\rho g h_A$ = 0.5ρg

   pressure P_B at point B = $\rho g h_B$ = 2ρg

   $$\frac{P_A}{P_B} = \frac{0.5\rho g}{2\rho g} = \frac{1}{4}$$

   $P_A : P_B = 1 : 4$

133. (A) $\frac{v}{r} = \omega$

   $$\frac{v_1}{r_1} = \frac{v_2}{r_2}, \frac{1.2}{3} = \frac{v}{1.5}, v = \frac{1.2}{2} = 0.6$$

134. (B) Gauge pressure = 21 bar

   atmospheric pressure = 1.013 bar

   absolute pressure = gauge pressure + atmospheric pressure = 21 + 1.013

   = 22.013 bar

139. (A) $R_N = \frac{vd}{v}, Q = aV$

   d = 80 mm = 0.08 m

   Area of cross-section $= \frac{\pi}{4}d^2 = \frac{\pi}{4}(0.08)^2$

   Q = Area cross section × velocity

   $\therefore$ velocity, $(V) = \frac{Q}{a} = \frac{3200\pi \times 10^{-4} m^3 / s}{\frac{\pi}{4} \times (0.08)^2 m^2}$

   $$= \frac{12800 \times 10^{-4}}{64 \times 10^{-4}}$$

   V = 200 m/s

   $$R_N = \frac{Vd}{v} = \frac{200 \times 0.08}{4 \times 10^{-2}} = \frac{1600}{4} = 400$$

   $R_N = 400 \Rightarrow$ flow is laminar

148. (A) $\frac{C}{100} = \frac{F - 32}{180}$

   $$C = \frac{100}{180}(F - 32) = \frac{5}{9}(F - 32)$$

   $$\frac{C}{5} = \frac{F - 32}{9}$$

151. (B) $Q_A = -105$MJ

   $T_H = 400$K

   $Q_R = 42$MJ

   $T_L = 200$K

   $$\frac{Q_A}{T_H} = \frac{Q_R}{T_L}$$

   $$\frac{105}{400} = \frac{42}{200}$$

   $$\frac{Q_A}{T_H} \neq \frac{Q_R}{T_L}$$

156. (B) $dQ = T.ds$

   $$\int_1^2 dQ = \int_1^2 dS$$

   $_1Q_2 = T(S_2 - S_1)$

   The area under the curve on TS diagram show the change of heat.

158. (B) Blade efficiency of steam turbine

$$= \frac{\text{Work done on the blade}}{\text{Supplied energy to blade}}$$

$$= \frac{m\left(V_{w_1} \pm V_{w_2}\right).V}{\frac{1}{2}mV_1^2}$$

$$= \frac{2V\left(V_{w1} \pm V_{w_2}\right)}{V_1^2}$$

163. (B) pv = c Hyperbolic process
for ideal gas pv = MRT
i.e. T=C
then, isothermal

164. (D) dU = mc$_v$ dT $\because$ dT = 0
dH = mc$_p$ dT for isothermal

179. (D) Poisson's Ratio is ratio of lateral strain to the longitudinal strain. It is denafed by µ. When volume change on loading is zero, value of µ is 0.5.

181. (A) The commonly used technique of strengthening thin pressure vessels is wire winding. The wire is wound under tension, thus putting the walls of the cylinder under compression. This way, the cylinder is prestressed.

188. (C) Coefficient of detention by friction

$$= \frac{f}{mg} = \frac{Friction\ force\ at\ sleeve}{Weight\ of\ ball}$$

$$\text{Coefficient of detention} = \frac{10}{50} = 0.2$$

193. (D) The principal stresses at any point in spherical sheel correspond to the hoop stress. The radial principal stress is zero and hence neglected.