



KD Campus Pvt. Ltd

PLOT NO.2, SSI INDUSTRIAL AREA, G.T. KARNAL ROAD, JAHANGIRPURI, DELHI-110033

Answer-key & Solution

SSC JE (Mechanical)
MOCK -(147)
Date:- 16.09.2018

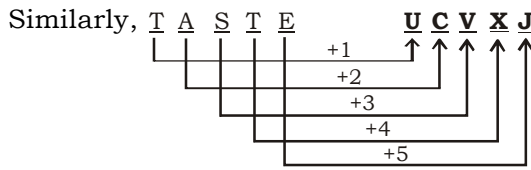
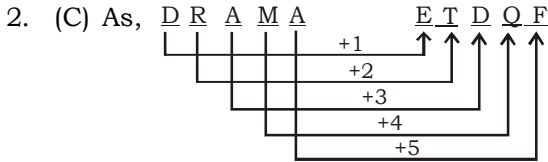
1. D	26. B	51. A	76. D	101. A	126. A	151. B	176. A
2. C	27. A	52. A	77. B	102. B	127. A	152. A	177. B
3. A	28. C	53. C	78. C	103. D	128. A	153. C	178. A
4. D	29. D	54. D	79. D	104. B	129. B	154. D	179. A
5. C	30. D	55. A	80. A	105. A	130. A	155. A	180. B
6. C	31. B	56. D	81. B	106. A	131. A	156. C	181.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

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

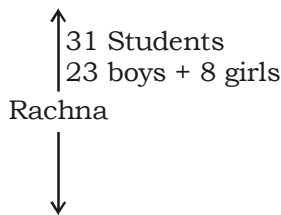
Note : If you face any problem regarding result or marks scored, please contact : 9313111777

SOLUTION SSC JE (Mechanical) MOCK TEST NO. 147

1. (D) Machine follows the instructions of Man. Similarly, **Slave** follows the instructions of Master.

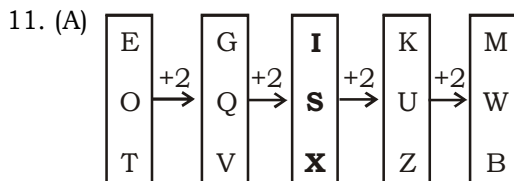


3. (A) As, $8 \Rightarrow (8)^2 + (8 \div 2) = 68$
 Similarly, $10 \Rightarrow (10)^2 + (10 \div 2) = 105$
4. (D) Except **Rome**, others are country.
5. (C) Except **728**, others are odd numbers.
6. (C) Except **LORU**, others have difference of 2 letters between two consecutive letters.
7. (C) DERMATOLOGY \rightarrow DORMANT \rightarrow DRAMATIC \rightarrow DRAPERY \rightarrow DROWSY
8. (B) Last flight's time = 10 : 45 am - 25 minutes = 10 : 20 am
 \therefore Next flight's time = 10 : 20 am + 5 : 45 hours = **4 : 05 pm**
9. (B) No. of boys = 40
 and, No. of girls = 20

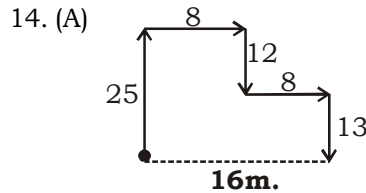
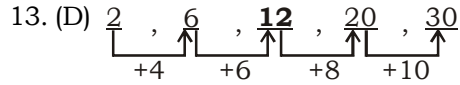


\therefore No of girls after Rachna = $20 - (8 + 1) = 11$

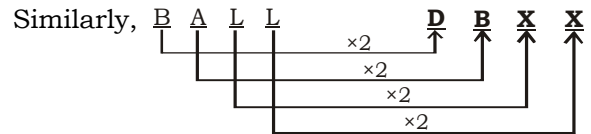
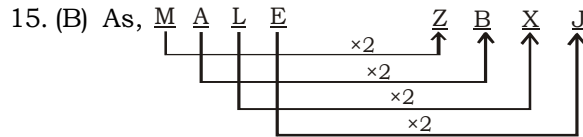
10. (C) **GREATER**



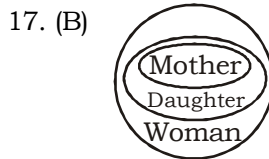
12. (B) $\begin{matrix} A & , & D & , & I & , & P & , & Y & , & J \\ \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow & & \downarrow \\ (1)^2 & & (2)^2 & & (3)^2 & & (4)^2 & & (5)^2 & & (6)^2 \end{matrix}$



\therefore Required distance = $8 + 8 = 16 \text{ m}$



16. (A) $27 + 9 \times 28 \div 343 - 49$
 After changing the signs as per the given details,
 $27 \times 9 - 28 + 343 \div 49 = 222$



18. (A)



I. False II. False

\therefore Neither conclusion I nor II follows

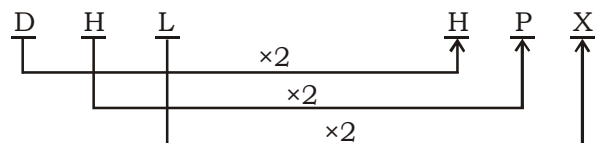
20. (A)

21. (A) $5^2 \times 3^2 = 225$
 $2^2 \times 4^2 = 64$
 $3^2 \times 9^2 = 729$

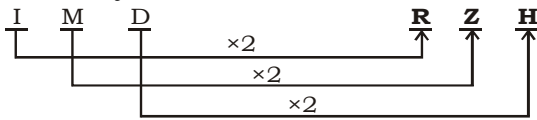
22. (D) $(8 + 7) \times 2 = 30$
 $(9 + 3) \times 5 = 60$
 $(7 + 4) \times 7 = 77$

26. (B) As, Scientist works in laboratory. Similarly, Astronomer works in **observatory**.

27. (A) As,



Similarly,



28. (C) As, Ctrl + C is used to copy.
Similarly, Ctrl + X is used to **cut**.
29. (D) Except **Polygon**, others have 4 sides.
30. (D) Except **LMN**, others have difference of 2 between the letters.
31. (B) Except **264**, sum of the digits of other numbers is 9.
32. (B) Forensic → Forest → Forfeit → Fortify
33. (C) Sarthak ← Sanju ← Ajay ← **Rajiv** ← Niraj
1 2 3 4 5
34. (C) **PROFORMA**
35. (C) CDDE/**CDDE**/CDDE
36. (D) $\begin{array}{ccccccc} 4 & , & 13 & , & 40 & , & 121 & , & 364 \\ \uparrow & & \uparrow & & \uparrow & & \uparrow & & \uparrow \\ \times 3+1 & & \times 3+1 & & \times 3+1 & & \times 3+1 & & \end{array}$
37. (A) $\begin{array}{cccc} OS & , & WY & , & CE & , & IK \\ \uparrow & & \uparrow & & \uparrow & & \uparrow \\ +6 & & +6 & & +6 & & \end{array}$
38. (D) $(2)^2 = 4$
 $(3)^2 = 9$
 $2 + 3 = 5 \Rightarrow (5)^2 = 25$
 $3 + 5 = 8 \Rightarrow (8)^2 = 64$
 $5 + 8 = 13 \Rightarrow (13)^2 = 169$
 $8 + 13 = 21 \Rightarrow (21)^2 = 441$
39. (C) **S T R E E T**
7 2 5 3 3 2
40. (D) **Same position** 35m
41. (B) $(27 + 33) \div 2 = 30$
 $(18 + 58) \div 2 = 38$
 $(37 + 59) \div 2 = 48$
42. (A) $(20 + 18 + 5) \times 2 = 86$
 $(27 + 12 + 8) \times 2 = 94$
 $(13 + 22 + 9) \times 2 = 88$
 $(19 + 27 + 2) \times 2 = 96$
52. (A) Credit is a contractual agreement in which a borrower receives something of value now and agrees to repay the lender at some date in the future, generally with interest. It is also known as loan. Credit also refers to an accounting entry that either decreases assets or increases liabilities and equity on the company's balance sheet.

53. (C) Money bills passed by the Lok Sabha are sent to the Rajya Sabha . The Rajya Sabha may not amend money bills but can recommend amendments. To make sure that Rajya Sabha doesn't amend the bill by adding some non-money matters, the Speaker of the Lok Sabha certifies the bill as a money bill before sending it to the upper house, and the decision of the Speaker is binding on both the Houses. A money bill must be returned to the Lok Sabha within 14 days, or the bill is deemed to have passed by both the houses in the form it was originally passed by the Lok Sabha.
54. (D) The main mineral constituents of the continental mass are Silica and Alumina. Thus it is called sial (si-silica and al-alumina). The oceanic crust mainly consists of Silica and Magnesium; therefore it is called sima (si-silica and ma-magnesium).
55. (A) Thiamine deficiency, also known as beriberi, is a condition that occurs due to not enough thiamine (vitamin B1). There are two main types in adults: wet beriberi, and dry beriberi. Wet beriberi results in a fast heart rate, shortness of breath, and leg swelling. Dry beriberi results in numbness of the hands and feet, confusion, trouble moving the legs, and pain.
56. (D) A periscope is an instrument for observation over, around or through an object, obstacle or condition that prevents direct line-of-sight observation from an observer's current position. In its simplest form, it consists of an outer case with mirrors at each end set parallel to each other at a 45° angle.
57. (B) Microsoft Word is a popular word-processing application that is included in the software suite of applications called Microsoft Office.
58. (D) Metathesis reactions in which two compounds react to form two new compounds, with no changes in oxidation number. Reactions in which the ions of two compounds exchange partners. Examples of metathesis reactions $\text{NaCl(aq)} + \text{AgNO}_3\text{(aq)} = \text{AgCl(s)} + \text{NaNO}_3\text{(aq)}$

59. (B) Parasitism, relationship between two species of plants or animals in which one benefits at the expense of the other, sometimes without killing the host organism. Examples of Parasitism: Fleas or ticks that live on dogs and cats are parasites.
60. (C) The adding machine was invented by a nineteen-year-old French boy named Blaise Pascal way back in the year 1642. He was France's most celebrated mathematician physicist and religious philosopher.
61. (D) "Al Nagah-II", the bilateral exercise was conducted between India and Oman in the Dhauladhar Ranges at Bakloh in Himachal Pradesh from March 6, 2017.
63. (A) NNP is the money value of all the goods and services produced within the domestic territory of a country in an accounting year corrected for net income from abroad and depreciation.
- NNP= GNP-Depreciation
64. (D) Conservation of Foreign Exchange and Prevention of Smuggling Activities (COFEPOSA) Act is an Act of the Parliament passed in 1974 during administration of Indira Gandhi, trying to retain foreign currency, prevent smuggling and economic offences.
65. (A) The Central Government can direct the state Governments under article 256 of the Indian Constitution.
67. (C) Bimbisara, one of the early kings of the Indian kingdom of Magadha. He established the Haryanka dynasty laid the foundations of Magadha by fortification of a village, which later became the city of Pataliputra.
68. (A) The Quit India Movement also known as India August Kranti was launched at the Bombay session of the All India Congress Committee (AICC) by Mahatma Gandhi on August 8, 1942.
71. (D) Lignite is a mineral known as brown diamond. It is considered the lowest rank of coal due to its relatively low heat content. It has carbon content around 60-70 percent.
73. (B) Steam produces more severe burns. Because steam (water in the gas phase) hits your skin, a lot of energy will be released as it condenses into a liquid.
74. (C) Kidney stones form when your urine contains more crystal-forming substances such as Calcium oxalate and Uric acid.
75. (C) Argon is a chemical element with symbol Ar and atomic number 18. Argon is the third-most abundant gas in the Earth's atmosphere, at 0.934%
76. (D) Vanaspati ghee is manufactured from vegetable or seed oil by a process called 'hydrogenation'. Vegetable Oil is a viscous liquid, and contains unsaturated fatty acids, upon hydrogenation it is converted to saturated fatty acids to form vanaspati ghee which is solid/semi solid in nature.
77. (B) The ozonosphere, also called the "ozone layer", is the concentrated layer of ozone found in the stratosphere.
78. (C) The Taj Mahal is turning yellow, due to a high level of Sulphur Dioxide in the air. To help control the pollution, the Indian government has set up the Taj Trapezium Zone (TTZ), a 10,400-square-kilometre area around the monument where strict emissions standards are in place.
79. (D) Rani Laxmi Bai pension scheme was launched by the state government of Uttar Pradesh. This scheme was launched for those people who are below the poverty Line or In BPL category.
81. (B) Guangzhou is the Chinese name of Canton city. It is the third largest city in China and is the political, economic, sci-tech, educational and cultural hub of southern China.
84. (B) Ashoka fought a war to conquer Kalinga. However, he was so horrified when he saw the violence and bloodshed that he decided not to fight any more wars. He is the only king in the history of the world who gave up conquest after winning a war.
86. (A) Isthmus of Panama, Spanish Istmo de Panama, land link extending east-west about 400 miles from the border of Costa Rica to the border of Colombia. It connects North America and South America and separates the Caribbean Sea from the Gulf of Panama (Pacific Ocean).
87. (C) India lies entirely in the Northern hemisphere. India's main land extends between latitudes 8°4'N and 37°6'N and longitudes 68°7'E and 97°25'E.
88. (D) A thick vein seen in the middle of the leaf is called the midrib. The design made by veins in a leaf is called the leaf venation.

89. (A) A power level of 1 hp is approximately equivalent to 746 watt (W) or 0.746 kilowatts (kW). Horsepower, the common unit of power.
90. (A) Acetylene is the chemical compound with the formula C_2H_2 . It is a hydrocarbon and the simplest alkyne.
91. (B) When steam is passed over red hot coke, water gas ($CO + H_2O$) is formed.

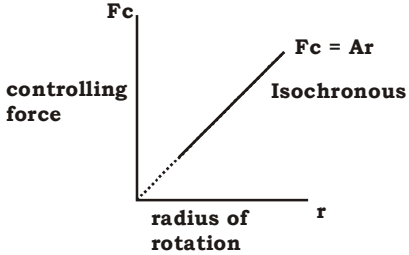
$$C + H_2O \longrightarrow CO + H_2O$$
 Water gas
92. (B) An artificial ecosystem meets all the criteria of a natural ecosystem but is made and controlled by humans. It is created to mimic a natural ecosystem but often is less complex and with a very low genetic diversity. Orchards, farmlands, a garden and man-made reservoirs are some examples of artificial ecosystems.
95. (A) Every production is organized by combining land, physical capital and human capital which are known as Factors of production. Resources required for generation of goods or services, generally classified into four major groups:
- Land (including all natural resources)
 - Labor (including all human resources)
 - Capital (including all man-made resources)
 - Enterprise (which brings all the previous resources together for production)
96. (A) Small Industries Development Bank of India (SIDBI) was set up on 2nd April 1990 under the Act of Indian Parliament. Currently, the shares of SIDBI (as on February 01, 2018) are held by the Government of India and 33 other institutions / public sector banks / insurance companies owned / controlled by the Central Government.
98. (C) The Union List or List-I is a list of 100 numbered items given in Seventh Schedule in the Constitution of India on which Parliament has exclusive power to legislate. The legislative section is divided into three lists:
- Union List,
 - State List
 - Concurrent List
99. (D)
- Part II - Citizenship
 - Part IV - Directive Principles of State Policy

- Part IV- Fundamental Duties
 - Part IX - Part IX of the Constitution provides for constitution, establishment, management, powers, functions and jurisdiction of Panchayats under Articles 243.
100. (B) The total geo-geographical area of the Indian country is 3,287,240 sq.km. This includes 120,849 sq. km. of area under the illegal occupation of Pakistan and China. The largest state in India in terms of geographical area is Rajasthan with an area of 342,239 sq.km. At the International level, India accounts for only 2.4 percent of the world surface area and yet it supports and sustains 16.9 percent of the world population.
101. (A) There is no loss of energy free fall of body.
 Total energy = Constant
 (At each point)

$$K.E + P.E = \text{Constant}$$
105. (A) From lami's theorem:-

$$\frac{1000}{\sin 90^\circ} = \frac{T_1}{\sin 150^\circ} = \frac{T_2}{\sin 120^\circ}$$

$$T_1 = 500 \text{ N}$$

$$T_2 = 866.6 \text{ N}$$
106. (A) $h_2 - h_1 = 2800 - 1800$
 $W = 1000 \text{ kJ/kg}$
 Specific consumption = $\frac{3600 \text{ kg}}{1000 \text{ kJ / sec}}$
 $= 3.6 \text{ kg/kw}$
107. (D) Given $r = 60 \text{ mm}$, $D = 80 \text{ mm}$
 Stroke length ,
 $L = 2r = 2 * 60 = 120 \text{ mm}$ (cylinder diameter)
 Swept Volume, $v_s = A * L = 603 \text{ cubic cm}$
110. (B) $\eta_{Bth} < \eta_{lth} < \eta_{Air \text{ std}}$
118. (A)
- 
120. (C)
$$I_D = \frac{M.R^2}{2} = \frac{MD^2}{8}$$

 Also $I_D = M.K^2$

$$\frac{M.D^2}{8} = M.K^2$$

$$K = \frac{D}{2\sqrt{2}}$$

123.(B) Compressibility $[\alpha] = \frac{1}{\text{Bulk modulus (k)}}$

$$\alpha = \frac{\partial V}{V(-\partial P)}$$

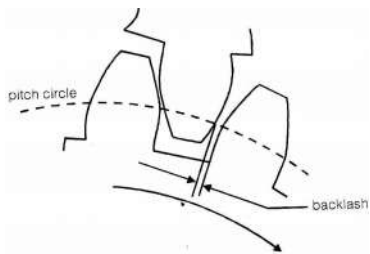
$$\alpha = -\frac{1}{V} \left[\frac{\partial V}{\partial P} \right]$$

130.(A) A stage of a reaction turbine consists of each row of blade i.e., one is fixed and other is movable.

131.(A) Creep is that property by virtue of which a metal specimen undergoes additional deformation with the passage of time under sustained loading within elastic limit. It is permanent in nature and cannot be recovered after removal of load, hence is plastic in nature.

132.(B) Resilience is the total strain energy stored in a given volume of a material within elastic limit. On removal of load this energy is released. In other words, it is the area under load deflection curve within elastic limit.

137.(A)



Backlash is defined as the amount by which the width of tooth space exceeds the thickness of the engagement tooth measured along the pitch circle.

140.(C) For maximum power transmission through nozzle :

Nozzle diameter

$$d = \left(\frac{D^5}{8fl} \right)^{\frac{1}{4}}$$

$$\text{and } \frac{A}{a} = \sqrt{\frac{8fL}{D}}$$

A = area of supply pipe
a = area of Nozzle

141.(C) At higher Mach number the compressibility effect predominant.

143.(D) For head

$$H \propto N^2$$

$$\frac{H_1}{H_2} = \left(\frac{N_1}{N_2} \right)^2, \frac{10}{H_2} = \left(\frac{1000}{2000} \right)^2$$

$H_2 = 40$ m
for power

$$P \propto N^3$$

$$\frac{P_1}{P_2} = \left(\frac{N_1}{N_2} \right)^3, \frac{1}{P_2} = \left(\frac{1000}{2000} \right)^3$$

$$P_2 = 8 \text{ kW}$$

150.(B) Quasistatic work,
 $dW = p dV$

$$dV = \frac{1}{P} dW$$

An inexact differential dW when multiplied by an integrating factor $1/P$ becomes an exact differential dV .

(Point function) = (Integrating factor) \times (Path function)

159.(D) $t_2 = 0.62$ mm

$$f = 0.2 \text{ mm/rev}$$

$$\alpha = 15^\circ$$

for orthogonal cutting

$$t_1 = f = 0.2 \text{ mm}$$

$$\text{So, } r = \frac{0.2}{0.62} = 0.33$$

$$\psi = \frac{1}{r} = 3$$

163.(A) $\tau \propto r$

$$\frac{\tau_w}{\tau} = \frac{R}{r}$$

$$\tau_w = \tau \frac{R}{r} = 20 \frac{10}{4}$$

$$\tau_w = 50 \text{ Pa}$$

164.(D) $d_1 = 6$ cm

$$d_2 = 12 \text{ cm}$$

$$h_L = \frac{1}{2g} (V_1 - V_2)^2$$

$$= \frac{V_1^2}{2g} \left[1 - \frac{V_2}{V_1} \right]^2$$



KD Campus Pvt. Ltd

PLOT NO.2, SSI INDUSTRIAL AREA, G.T. KARNAL ROAD, JAHANGIRPURI, DELHI-110033

from continuity equation

$$\frac{V_2}{V_1} = \frac{A_1}{A_2} = \left(\frac{d_1}{d_2}\right)^2$$

$$h_L = \frac{V_1^2}{2g} \left[1 - \left(\frac{d_1}{d_2}\right)^2 \right]^2$$

$$= \frac{V_1^2}{2g} \left[1 - \left(\frac{1}{2}\right)^2 \right]^2$$

$$= \frac{V_1^2}{2g} \left(\frac{3}{4}\right)^2$$

$$h_L = \frac{9}{16} \frac{V_1^2}{2g}$$

$$165.(B) t = ap + b$$

$$0 = 2a + b \dots\dots(i)$$

$$100 = 4a + b \dots\dots(ii)$$

from above equation

$$a = 50, b = -100$$

$$\text{So, } t = 50p - 100$$

$$\text{at } p = 3.5 \text{ bar}$$

$$t = 175 - 100 = 75^\circ \text{ C}$$

$$194.(C) P = 1750 \text{ KW}$$

$$H = 100 \text{ m}$$

$$P_u = \frac{P}{H^{3/2}}$$

$$= \frac{1750}{100^{3/2}}$$

$$= \frac{1750}{1000}$$

$$P_u = 1.75 \text{ KW}$$