KD Campus
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2007, OUTRAM LINES, 1ST FLOOR, NEAR GTB NAGAR METRO STATION, GATE NO. - 2, DELHI-110009

Answer-key & Solution

SSC JE (Mechanical)
MOCK -(62)
Date 27/ 08/ 2016

1. B	26. A	51. B	76. A	101. A	126. A	151. B	176. B
2. C	27. B	52. C	77. C	102. A	127. D	152. A	177. B
3. D	28. C	53. A	78. A	103. B	128. C	153. A	178. D
4. C	29. B	54. C	79. B	104. A	129. B	154. C	179. C
5. B	30. C	55. A	80. C	105. B	130. D	155. A	180. D
6. C	31. D	56. C	81. B	106. A	131. C	156. B	181. C
7. A	32. D	57. D	82. B	107. D	132. C	157. B	182. A
8. D	33. C	58. B	83. D	108. A	133. D	158. C	183. D
9. A	34. D	59. D	84. A	109. B	134. A	159. B	184. A
10. C	35. C	60. C	85. D	110. B	135. A	160. D	185. B
11. A	36. C	61. A	86. C	111. A	136. C	161. A	186. C
12. B	37. D	62. C	87. B	112. A	137. C	162. D	187. B
13. D	38. B	63. A	88. D	113. A	138. A	163. A	188. D
14. D	39. B	64. D	89. A	114. C	139. A	164. A	189. A
15. D	40. A	65. D	90. A	115. B	140. D	165. B	190. A
16. B	41. B	66. A	91. C	116. D	141. C	166. A	191. B
17. C	42. D	67. B	92. B	117. B	142. D	167. C	192. C
18. D	43. A	68. C	93. B	118. A	143. C	168. C	193. B
19. B	44. A	69. A	94. B	119. D	144. C	169. B	194. D
20. D	45. C	70. B	95. C	120. D	145. A	170. D	195. B
21. B	46. C	71. A	96. A	121. C	146. B	171. B	196. B
22. A	47. D	72. C	97. B	122. C	147. C	172. D	197. C
23. D	48. A	73. A	98. D	123. C	148. C	173. D	198. A
24. B	49. B	74. C	99. C	124. A	149. A	174. D	199. D
25. C	50. C	75. A	100. B	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 8375805483*

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

SOLUTION SSC JE (Mechanical) MOCK TEST no. 62

1. (B) 'Oval' is related to 'Circle' in the same way 'Rectangle' is related to **Square**.
2. (C) A cub is a young bear, and a joey is a young **kangaroo**.
3. (D) A **bracelet** is worn around the wrist, and a belt is worn around the waist.
4. (C) You enter and exit a highway by a ramp and you enter and exit a house by a **door**.
5. (B) A vamp is part of a shoe, and a hood is part of a **car**.
6. (C) A **haiku** is a type of poem, and a fable is a type of story.
7. (A) A F K P B G L Q (+1, +1, +1, +1)

   Similarly,

   C H M R **D I N S** (+1, +1, +1, +1)
8. (D) $\frac{18\times18}{2}=\frac{324}{2}=162$

   Similarly,

   $\frac{36\times36}{2}=\frac{1296}{2}=648$
9. (A) 9536 – 6203 = 3333,
   Similarly,
   ? = 5873 – 3333 = 2540
10. (C) Loss of memory is referred to as Amnesia. Similarly, loss of movement is referred to as Paralysis.
11. (A) 72 – 41 = 31
    30 – 12 = 18
    51 – 42 = 9
    20 – 11 = 9
    Except in option (A), the rest of the difference are one of the factor of 9.
12. (B) Except Nagpur, all are north indian cities.
13. (D) The number 125 is a perfect cube.
    5 × 5 × 5 = 125
14. (D) F $\xrightarrow{+3}$ I $\xrightarrow{+2}$ K
    M $\xrightarrow{+3}$ G $\xrightarrow{+2}$ I
    M $\xrightarrow{+3}$ P $\xrightarrow{+2}$ R
    K $\xrightarrow{+3}$ N $\xrightarrow{-10}$ D
15. (D) The scientific study of the second is called the first in all the pairs except D.
16. (B) Read 'Stream' as 'Stem'.
    Except (B), In others second is a part of first whereas chair and sofa are different types.
17. (C) Kennel is a shelter for a pet dog, stable is a shelter for horses. Den is a living place of lion. But lock is used for safety of a door.
18. (D) 5 + 2 = 7, 6 + 3 = 9, 2 + 4 = 6
    But 3 + 5 = 8 ≠ 6
19. (B) W $\xrightarrow{+5}$ B $\xrightarrow{+9}$ K $\xrightarrow{+6}$ Q $\xrightarrow{+7}$ X $\xrightarrow{+1}$ Y $\xrightarrow{+7}$ F

    W $\xrightarrow{+2}$ Y $\xrightarrow{+3}$ B $\xrightarrow{+4}$ F $\xrightarrow{+5}$ K $\xrightarrow{+6}$ Q $\xrightarrow{+7}$ X

    Y $\xrightarrow{+3}$ B $\xrightarrow{+15}$ Q $\xrightarrow{+0}$ Q $\xrightarrow{-11}$ F $\xrightarrow{+2}$ H $\xrightarrow{+6}$ N

    W $\xrightarrow{+3}$ Z $\xrightarrow{+3}$ C $\xrightarrow{+5}$ H $\xrightarrow{+2}$ J $\xrightarrow{+3}$ M $\xrightarrow{+4}$ Q
20. (D) a **b** c / **c** b a / a b **c** / c b **a**
21. (B)

13	8	9	17	14	22	
↓	↓	↓	↓	↓	↓	
M	H	I	Q	N	V	
1	**12**	**7**	**5**	**2**	**18**	**1**
↓	↓	↓	↓	↓	↓	↓
A	**L**	**G**	**E**	**B**	**R**	**A**
4	21	7	18	13	1	
↓	↓	↓	↓	↓	↓	
D	U	G	R	M	A	

22. (A)

C	A	R		S	I	T		W	E	L	L
↓	↓	↓		↓	↓	↓		↓	↓	↓	↓
∅	α	δ		η	ψ	κ		σ	i	γ	γ

M	A	P		γ	α	μ	β
↓	↓	↓	So,	↓	↓	↓	↓
μ	α	β		**L**	**A**	**M**	**P**

23. (D) 5 × 8 = 28 → 5 × 8 = 40 → 5 + 8 = 13,
    13 – 1 = 12 → 40 – 12 = 28
    3 × 7 = 12 → 3 × 7 = 21 → 3 + 7 = 10,
    10 – 1 = 9 → 21 – 9 = 12
    8 × 6 = 35 → 8 × 6 = 48 → 8 + 6 = 14,
    14 – 1 = 13 → 48 – 13 = 35
    13 × 13 = ? → 13 × 13 = 169 → 13 + 13 = 26,
    26 – 1 = 25 → 169 – 25 = 144
24. (B) 13 * 12 * 5 * 4 → 13 = 12 + 5 – 4 = 17 – 4
25. (C) 4 × 8 + 3 = 32 + 3 = 35
    7 × 6 + 7 = 42 = 42 + 7 = 49
    9 × 8 + 9 = 72 + 9 = **81**
26. (A) $(7)^2 + (5)^2 + (3)^2 = 49 + 25 + 9 = 83$
    $(6)^2 + (4)^2 + (2)^2 = 36 + 16 + 4 = 56$
    $(8)^2 + (9)^2 + (1)^2 = 64 + 81 + 1 = \mathbf{146}$

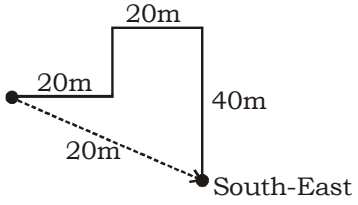
27. (B) $\frac{225}{15} = 15 \rightarrow 15 \times 2 = 30$

$\frac{70}{7} = 10 \rightarrow 10 \times 2 = 20$

$\frac{?}{3} = \frac{8}{2} \rightarrow 2 \times ? = 8 \times 3$

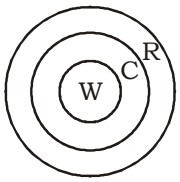
$\therefore \frac{24}{2} = 12$

28. (C)



It is clear from the diagram that I am in south-east direction with respect to the original positon.

29. (B)



1. 3 2. 5

30. (C)

S	E	Q	U	E	N	C	E
↓	↓	↓	↓	↓	↓	↓	↓
H	V	J	F	V	M	X	V

Opposite Letters

Similarly,

C	H	I	L	D	R	E	N
↓	↓	↓	↓	↓	↓	↓	↓
X	S	R	O	W	I	V	M

31. (D) Only son of woman's grandfather means father of that woman.
Father of woman is the father of man's brother and hence father of that man.
Therefore, the woman is sister of the man in photograph.

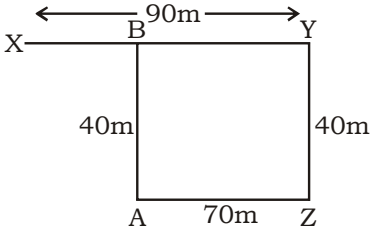
32. (D) Suppose present age of Mrs. Lata = x years
Present age of son = y years;
$\therefore x + y = 64$ ...(i)
According to the question, $x - 8 = 3(y - 8)$
$\rightarrow x - 8 = 3y - 24 \rightarrow x - 3y = -16$ ...(ii)
From equations (i) and (ii), $y = 20$;
$\therefore$ Age of Mrs. Lata = 64 – 20 = 44 years

33. (C) 5 × 2 + 1 = 11
11 × 2 – 1 = 21
21 × 2 + 1 = 43
43 × 2 – 1 = 85
85 × 2 + 1 = **171**

34. (D) 12 × 2 + 3 = 27
27 × 3 + 4 = 85
85 × 4 + 5 = 345
345 × 5 + 6 = **1731**

35. (C) A $\xrightarrow{+3}$ D $\xrightarrow{+3}$ G $\xrightarrow{+3}$ J
Y $\xrightarrow{-3}$ V $\xrightarrow{-3}$ S $\xrightarrow{-3}$ P
K $\xrightarrow{+3}$ N $\xrightarrow{+3}$ Q $\xrightarrow{+3}$ T
Similarly,
O $\xrightarrow{-3}$ L $\xrightarrow{-3}$ I $\xrightarrow{-3}$ F

36. (C)



Required distance = XB = 90 – 70
= 20 metre

37. (D) Comparing (i) and (iii) dice we have,

Top	3	**2**	1
Bottom	4	**5**	6

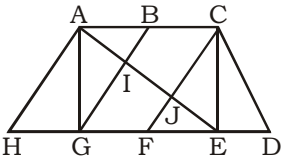
38. (B) Clearly, assumption I is implicit in the statement. It is mentioned that the values of an educated will differ from that of an uneducated person. It does not imply that an uneducated person will not have value.

39. (B) Some teachers may be writers and vice-versa.

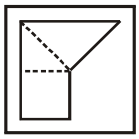
40. (A)

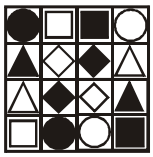
41. (B)

42. (D) The figure may be labelled as shown.



The simplest triangles are AHG, AIG, AIB, JFE, CJE and CED i.e. 6 in number.
Triangles composed of two components each are ABG, CFE, ACJ and EGI i.e. 4 in number.
Triangles composed of three components each are ACE, AGE and CFD i.e. 3 in number.
There is only one triangle i.e. AHE composed of four components.
Therefore, There are 6 + 4 + 3 + 1 = 14 triangles in the given figure.

43. (A) 

44. (A) 

45. (C) Let x and y be the ten's and unit's digits respectively of the numeral denoting the woman's age.
Then, woman's age = $(10x + y)$ years; husband's age = $(10y + x)$ years.
Therefore $(10y + x) - (10x + y) = (1/11)(10y + x + 10x + y)$
$\Rightarrow (9y - 9x) = (1/11)(11y + 11x) = (x + y)$
$\Rightarrow 10x = 8y \Rightarrow x/y = 4/5$
$\Rightarrow 10x + y = 10 \times 4 + 5 = 45$

46. (C)

47. (D)

48. (A)

49. (B) L.C.M. of 6, 5, 7, 10 and 12 is 420.
So, the bells will ring together after every 420 seconds i.e. 7 minutes.
Now, $7 \times 8 = 56$ and $7 \times 9 = 63$.
Thus, in 1 hour (or 60 minutes), the bells will toll together 8 times, excluding the one at the start.

50. (C)

54. (C) Numbers of Neutrons in $_{33}Al^{47} = 47 - 33 = 14$

55. (A) Gopal Hari Deshmukh was a social reformer from Maharashtra. At age of 25, Deshmukh started in the weekly Prabhakar under the pen name Lokhitawadi. In the first two years, he penned 108 articles on social reform. That group of articles has come to be known in Marathi literature as Lokhitawadinchi Shatapatre.

58. (B) He used cannon and ammunition from the Portuguese to attack the English. In June 1661, Shivaji's soldiers plundered Rajapur and captured several Englishmen. This was payback for the English aid to Bijapur. The following year, he captured a band of Englishmen in Surat for supplying ammunition to his enemies.

60. (C) To be eligible for membership in the Lok Sabha, a person must be a citizen of India and must be of 25 years of age or older, mentally sound, should not be bankrupt and should not be criminally convicted. The minimum age for a person to become a member of Rajya Sabha is 30 years.

62. (C) Visakhapatnam Urban Development Authority (VUDA), in collaboration with Indian Navy's Eastern Naval Command. It has set up India's first ship museum in the port city. The ship museum has been set up at Teneti Park abutting the Rama Krishna beach on the lines of 'INS Kurusura submarine museum' that was set up by the Indian Navy in August 2002.

63. (A) Sarkaria Commission was set up in June 1983. Commission's charter was to examine the relationship and balance of power between state and central governments in the country and suggest changes within the framework of Constitution of India. The Commission was so named as it was headed by Justice Rajinder Singh Sarkaria, a retired judge of the Supreme Court of India. The other two members of the committee were Shri B Sivaraman and Dr S R Sen.

66. (A) The Sargasso Sea is a region in the gyre in the middle of the North Atlantic Ocean. The Sargasso Sea is home to seaweed of the genus Sargassum (origin of its name).

69. (A) Eutrophication is the ecosystem response to the addition of artificial or natural substances, such as nitrates and phosphates, through fertilizers or sewage, to an aquatic system. One of its example is the "bloom".

72. (C) OMOs are the market operations conducted by the Reserve Bank of India by way of sale/purchase of Government securities to/ from the market with an objective to adjust the rupee liquidity conditions in the market on a durable basis.

75. (A) Per capita income or average income or income per person is the mean income within an economic aggregate, such as a country or city. It is calculated by taking a measure of all sources of income in the aggregate (such as GDP or Gross National Income) and dividing it by the total population.

77. (C) The Kalinga Prize for the Popularization of Science is an award given by UNESCO for exceptional skill in presenting scientific ideas to lay people. It was created in 1952, following a donation from Biju Patnaik, Founder President of the Kalinga Foundation Trust in India.

78. (A) Shortly after blackbody radiation was understood. it was noticed that the spectra of stars look extremely similar to blackbody radiation curves of various temperatures.

86. (C) The peanuts or groundnut (Arachis hypogaea), is a species in the legume "bean" family (Fabaceae). The cultivated peanut was first domesticated in the valleys of Peru. It is an annual herbaceous plant growing tall.

88. (D) John Mccloy was the Bank's President at that time when world bank loan was received by France.

89. (A) The electrocardiogram (ECG or EKG) is a diagnostic tool that measures and records the electrical activity by electrodes placed on the skin. The electrocardiogram can measure the rate and rhythm of the heartbeat, as well as provide indirect evidence of blood flow to the heart muscle.

92. (B) Chondrichthyes or cartilaginous fishes are jawed fish with paired fins, paired nares, scales, a two-chambered heart, and skeletons made of cartilage rather than bone. The cartilaginous fish are so named because their skeleton is composed of cartilage which is not reinforced by the minerals that make bone. It includes elasmobranchs: sharks, rays and skates etc.

94. (B) The Control Panel is a part of the Microsoft Windows graphical user interface which allows users to view and manipulate basic system settings and controls via applets such as adding hardware, adding and removing software, controlling user accounts and changing accessibility options.

97. (B) Text can be aligned with one or both edges of a text frame. Text is said to be justified when it is aligned with both edges. We can justify text in a paragraph including the last line.

100. (B) The ABO blood group system is widely credited to have been discovered by the Austrian scientist Karl Landsteiner, who found three different blood types in 1990; he was awarded the Nobel Prize in Physiology or Medicine in 1930 for his work.

101. (A) Calculate the frictional force.

$F = \mu R$

$R = mg$

From eqs. (i) and (ii)

$F = \mu mg = 0.3 \times 20 \times 9.8$

$= 58.8$ N

The external force on the block is less 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

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

$\Rightarrow v^2 = 3600$

$\Rightarrow v = 60$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

$= \rho.v$

$= 0.9 \times 1000 \times 0.28 \times 10^{-4}$

(1 stoke = 10^{-4} m^2/s)

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

= 1.2 m

143. (C) from first law of thermodynamics

$Q = \Delta U + W$

$U_B - U_A = Q - W$

= 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 $= -\int Vdp$

or W = area ABFG

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

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

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

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

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.

Correction from MOCK TEST-61
127 (B), 186 (B)