



KD Campus Pvt. Ltd

2007, OUTRAM LINES, 1ST FLOOR, OPPOSITE MUKHERJEE NAGAR POLICE STATION, DELHI-110009

Answer-key & Solution

SSC JE (Mechanical)

MOCK -(115)

Date 17.9.2017

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

Correction Mock Test - 114 (107. D, 118 B, 123 A, 161 D, 188 C)

$$115.(A) I.P = P_m V \frac{N}{2}$$

$$= 600 (6 \times 10^{-3}) \frac{1000}{2}$$

$$I.P = 1800 \text{ KW}$$

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

My wife's son = My son
so, the man's son is in the picture and he is the father of the son.

40. (A)

41. (B)



I. ×
II. ✓

42. (C)

43. (B) Total number of digits = $1 \times 9 + 2 \times 90 + 3 \times 267$
 $= 9 + 180 + 801 = 990$

44. (A) Here we should use the formula $n(n-1)$ to find the number of people present in party where n is the no. of people present in the party.

So, $n(n-1) = 210$

$$\Rightarrow n^2 - n - 210 = 0$$

$$\Rightarrow n^2 - 15n + 14n - 210 = 0$$

$$\Rightarrow n(n-15) + 14(n-15) = 0$$

$$\Rightarrow (n+14)(n-15) = 0$$

$$\Rightarrow n = 15$$

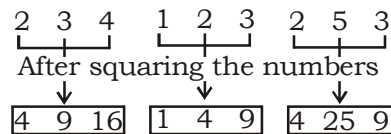
No. of people present in the party = 15

45. (A) Some engineers and Surgeons can be the teachers in Engineering & Medical Colleges.

46. (A) From cube IIIrd and IVth we have,



47. (B)



51. (A) \Rightarrow Beri-Beri is a disease caused by the deficiency of vitamin B1. This water soluble vitamin is known as Thiamine or anti beri-beri or antineuritic factor. It is common in areas where polished rice is the major food item.

\Rightarrow Malaria is an insect-borne disease caused by a parasitic protozoan, plasmodium.

\Rightarrow Kala-azar or black fever is a insect-borne disease caused by protozoan parasites of the Leishmania genus.

\Rightarrow Plague is a deadly disease caused by bacteria Yersinia pestis.

52. (C) Godwin Austen also known as K_2 is the second highest mountain peak after Mount Everest. As Mount Everest is not given in options so, answer will be (C) Godwin Austen.

53. (D) The Durgapur steel plant was launched with an assistance of a consortium led by British Firms and started in 1956.

\Rightarrow The Rourkela steel plant was set up in collaboration of German firms viz Krupp and Dernag. It was started in 1961.

\Rightarrow The Bhilai Steel plant was set up with the technical assistance of Soviet Union in September 1967.

\Rightarrow Bokaro steel plant was setup in collaboration with the Soviet Union. It was originally incorporated as a limited company on 29th January 1964 and was later merged with SAIL.

54. (B) Conjunctivitis also known as Pinkeye, causes a redness and inflammation of the clear membranes covering the white part of the eye and membranes of inner part of eyelids.

\Rightarrow Dermatitis - it is an inflammatory reaction involving the eyelid skin.

\Rightarrow Gout is an acute inflammatory arthritis causes swelling in joint, stiffness, sudden burning pain.

\Rightarrow Meningitis is an injection of the fluid and membranes around the brain and spinal cord.

56. (A) Short Sightedness is also known as Myopia. It occurs when light is focussed in front of the retina. It occurs if either the eyeball is too long or if the cornea is too curved. People suffering from this is not able to see distant objects clearly.

57. (C) The DPSP (Directive Principles of State Policy) is guidelines to the Central and State Governments of India, to be kept in mind while framing laws and policies. They are enumerated in part IV of the Constitution and lays down certain economic and social policies to be pursued by the various governments in India. They are classified as social and economic charter, social security charter and community welfare charter.

58. (A) The Constitution of India has borrowed the Parliamentary system of Government, Nominal Head-President, Cabinet System of Ministers, post of PM, Bicameral Parliament, Lower house more powerful, Council of Ministers responsible to Lower House and Speaker in Lok Sabha from the UK.

59. (C) Top 5 shipbuilding countries are South Korea, China, Japan, Philippines and Vietnam.

60. (A) Lake Baikal in Southern Russia is the world's deepest lake. It is 5,314 feet deep

- and its bottom is at 4,215 feet below sea level. Lake Baikal is also the world's largest freshwater lake in terms of volume.
61. (B) The Great Indian Bustard, one of the heaviest flying birds, can weigh up to 15 kg and grows up to one metre in height. Less than 200 birds are left now, of which about 100 are in Rajasthan. On June 5, the State announced Project Great Indian Bustard with an objective of conservation of the remaining population of the bird.
63. (B) Bodh Gaya is the place where Gautam Buddha attained Enlightenment under Bodhi tree. Apart from Bodh Gaya, three pilgrimage sites related to the life of Buddha are Kushinagar, Lumbini and Sarnath. In 2002, Mahabodhi temple, located in Bodh Gaya, became a UNESCO World Heritage site.
64. (B) The Pandyas ruled over an area consisting of the modern day Southern Tamil Nadu. Their capital was Madurai which was the political and cultural centre.
65. (B) A dust storm or sand storm is a meteorological phenomenon common in arid and semi-arid regions. It occurs during summer months and are quite violent. Dust storms during summer indicates arrival of monsoon while in winter it indicates arrival of winter season. So, in summer it decreases the temperature.
67. (B) Lucknow Pact is an agreement that took place between Indian National Congress, led by Bal Gangadhar Tilak and the All India Muslim League, led by Muhammed Ali Jinnah in Lucknow in 1916. It provided for the representation of Muslim through separate electorates. It established a cordial relation between moderates and extremists. It also, pressurised the British Government to have more liberal approach towards India.
68. (B) Edward Jenner was the first person who developed and generalized the vaccination technique against the dreadful disease smallpox. Smallpox is caused by virus Variola.
69. (B) Asbestosis is a chronic lung disease characterized by scarring of lung tissues, which leads to long term breathing complications and it does not have a cure. It occurs due to asbestos mining, milling trades, ship builders and insulation of workers in the construction and building trades.
- ⇒ Silicosis is a form of occupational lung disease caused by inhalation of crystalline silica dust.
- ⇒ Siderosis is the deposition of iron in tissue and refers to an environmental disease of the lung.
- ⇒ Asthma and Tuberculosis - Tuberculosis is caused by organism mycobacterium tuberculosis. It mainly affects lungs.
70. (D) China has launched the Yaogan-23 remote sensing satellite in to scheduled orbit from the Taiyuan Satellite Launch Centre in North China's Shanxi province. It will be used for scientific experiments, natural resource surveys, crop yield estimates and disaster relief. It was carried by a Long March-2C rocket.
72. (A) Dakshin Gangotri was India's first scientific manned station in Antarctica. The name is derived from the Gangotri Glacier which acts as the source for the river Ganges. 'Dakshin' is a Sanskrit word meaning 'South'.
- ⇒ Himadri is India's first Arctic research station located at Norway. It was set up during India's second arctic expedition in June 2008. It is located at a distance of 1,200 kms from the North Pole.
- ⇒ Palmer Station is the only US research station in Antarctica.
74. (B) Pravasi Bharatiya Samman 2015 has been awarded to 15 prominent non-resident Indians. The awards were presented by Vice-President Hamid Ansari on the Concluding day of 13th Pravasi Bharatiya Diwas.
75. (D) Battle of Chanderi, 1528-Medni Rai of Chanderi was defeated by Babur.
- ⇒ First battle of Panipat, 21 April 1526- Babur defeated the forces of Lodhi empire and marked the beginning of the Mughal Empire.
- ⇒ Battle of Khanwa, 17 March 1527- Rajputs under Rana Sanga of Mewar, were defeated by Babur of Ferghana.
- ⇒ Battle of Ghagra, 6 May 1529- Babur defeated and dispersed Afghans.

76. (B) Revolutionary Communist Party of India (RCPI) is a political party in India. The party was founded by Saumyendranath Tagore in 1934.
79. (C) Fundamental Duties were added in the Constitution by 42nd Amendment Act in 1976 by the recommendation of Swaran Singh Committee. Total 11 Fundamental Duties are there in which organization of village panchayat is not there. It is a part of DPSP.
81. (D) All physiological aspects of plants are affected by plant hormones including auxins, cytokinin and gibberellins. Cytokinin promotes cell division, controls many development processes in plants.
82. (A) Edaphic factors are defined as ecological influences properties of the soil brought by its physical and chemical characteristics.
85. (D) Brazil is the world's second largest producer of ethanol fuel and together with US leads the industrial production of ethanol fuel. Ethanol is blended with Gasoline for Internal Combustion Engines in automobiles, motorcycles etc.
86. (C) The Saudi Air force launched operation Storm of Resolve with the support of aviation from Bahrein, Qatar, Kuwait and the United Arab Emirates against Shia rebels who have seized control of a considerable part of Yemen.
88. (B) The National Rural Drinking Water Programme (NRDWP) is a flagship programme of the Government and a component of Bharat Nirman with the objective of ensuring provision of safe and adequate drinking water supply through handpumps etc to all rural areas, households and persons. This programme was launched after merging three programmes- Accelerated Rural Water Supply Programme (ARWSP), Swajaldhara and National Rural water quality Monitoring and Surveillance.
92. (B) Merchant Bank mostly deals in international finance, long-term loans for companies and underwriting. It does not provide regular banking services to the general public.

101. (C) $v^2 - u^2 = 2as$

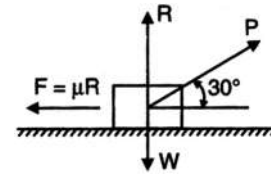
$$\therefore a = -\frac{u^2}{2s} \quad (\because v = 0)$$

$$= -\frac{90}{2 \times 0.6} = -6750 \text{ m/s}^2$$

$$F = ma = 0.04 \times (-6750) = -270 \text{ N}$$

The -ve sign indicates that the average resistive force is retarding in nature.

103. (C) In the limiting equilibrium, the forces are balanced. That is



$$F = P \cos \theta ;$$

$$R = W - P \sin \theta$$

Also $F = \mu R$

$$\therefore \frac{P \cos \theta}{\mu} = W - P \sin \theta$$

$$\text{or } P = \frac{\mu W}{\cos \theta + \mu \sin \theta} = \frac{0.3 \times 120}{\cos 30 + 0.3 \sin 30} = 35 \text{ N}$$

105. (D) $\delta = \frac{WL}{2AE}$ extension due to self weight

$$\delta_1 = \frac{WL}{AE} \text{ extension with load applied at the end. Obviously } \delta_1 = 2\delta$$

109. (B) For the solid shaft, $\tau = \frac{16 T}{\pi D^3}$

For the hollow shaft,

$$\tau = \frac{16 T D}{\pi(D^4 - d^4)} = \frac{16T}{\pi D^3} \times \frac{1}{1 - (d/D)^4}$$

$$= \frac{16 T}{\pi D^3} \times \frac{1}{1 - (1/2)^4}$$

$$= \frac{16}{15} \times \frac{16 T}{\pi D^3} = 1.067 \tau$$

110. (C) $\frac{T}{J} = \frac{G\theta}{l}$

$$\therefore \theta \propto \frac{1}{J} \text{ or } \theta \propto \frac{1}{d^4}$$

Thus, $\frac{0.1}{\theta} = \frac{(d/2)^4}{d^4}$

or $\theta = 1.6$ radian

111. (C) Critical stress $\sigma_{cr} = \frac{p_{cr}}{A} = \frac{\pi^2 EI}{L^2 A}$

For the same material, column length and

its end conditions $\sigma_{cr} \propto \frac{I}{A}$

$$\begin{aligned} \therefore \frac{(\sigma_{cr})_{square}}{(\sigma_{cr})_{circular}} &= \frac{I_s}{A_s} \times \frac{A_c}{I_c} \\ &= \frac{(10 \times 10^3)/12}{10 \times 10} \times \frac{\pi/4 \times 10^2}{\pi/64 \times 10^4} = \frac{4}{3} \end{aligned}$$

119. (B) For a Hartnell governor: $s h = S_1 - S_2$; where s is the spring stiffness, h is the governor height, S_1 and S_2 are the spring loads at the highest and lowest equilibrium speeds

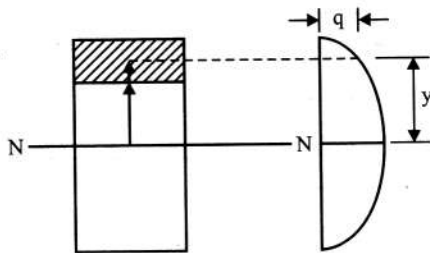
$$s = \frac{S_1 - S_2}{h} = \frac{1150 - 850}{1.5} = 200 \text{ N/cm}$$

133. (D) For a throttling process $h_1 = h_2$

$$u_1 + p_1 v_1 = u_2 + p_2 v_2$$

$$\begin{aligned} \therefore u_2 - u_1 &= p_1 v_1 - p_2 v_2 \\ &= 10 \times 10^5 \times 0.5 - 1 \times 10^5 \times 2 \\ &= 3 \times 10^5 \text{ Nm/kg} = 300 \text{ kJ/kg} \end{aligned}$$

158. (B)



$$q = \frac{S}{2l} \left(\frac{d^2}{4} - y^2 \right)$$

159. (C) Strain energy = $\left(\frac{1}{2} \times \sigma \times \epsilon \right) \times \text{Volume}$

$$= \frac{1}{2E} \times \sigma^2 \times \text{Volume}$$

$$= \frac{1}{2E} \left(\frac{4F}{\pi d^2} \right)^2 \times \frac{\pi d^2}{4} L$$

$$= \frac{4F^2 L}{2\pi E d^2} = \frac{2F^2 L}{\pi E d^2}$$

160. (C) Internal strain energy

$$= \frac{1}{2} \times P \times \delta + \frac{1}{2} \times T \times \theta$$

$$= \frac{1}{2} \times P \times \frac{PL}{AE} + \frac{1}{2} \times T \times \frac{TL}{GJ} = \frac{P^2 L}{2AE} + \frac{T^2 L}{2GJ}$$

165. (C) Inversion of single slider crank chain are

(i) engine/compressor

(ii) Whitworth Quick Return Mech/Rotary cylinder engine

(iii) slotted lever type/oscillating cylinder type

(iv) Hand pump mechanism

187. (D)

$$L = \left(\frac{C}{P} \right)^3 \quad [c = \text{constant}]$$

$$L_1 P_1^3 = L_2 P_2^3$$

$$L_1 (P)^3 = L_2 \left(\frac{P}{2} \right)^3$$

$$L_1 P^3 = \frac{L_2 P^3}{8}$$

200. (B) Submerged Arc welding: the arc occurring between the electrode and the workpiece is completely submerged under the flux and not visible from outside. A part of the flux melts and forms the slag which covers the weld metal.