



# KD Campus Pvt. Ltd

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

## Answer-key & Solution

SSC JE (Civil)  
MOCK -(98)  
Date 20.5.2017

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

1. (A)  $8 \Rightarrow 8^2 = 64 \Rightarrow 6 + 4 = 10$   
 $9 \Rightarrow 9^2 = 81 \Rightarrow 8 + 1 = 9$
2. (C) Monday is a day and Taurus is a **Zodiac**.
3. (D) The next vowel to A is E and the next vowel to O is U.
4. (C) Except **Venus**, rest of the planets rotates in the same direction.
5. (C)  $125 = 5^3$ ,  $216 = 6^3$ ,  $343 = 7^3$ , (**256 = 16^2**) which is different from others.
6. (A) **Bat** is the only mammal in the given group.
7. (D)
 

X ——— Y

↓

Z

↓

P

So, P is in **South-West** of Y.
8. (B)
9. (D)  $S > T$     $W > V$     $T > W$   
So we have  $S > T > W > V$   
So, **V** is the lightest bag.
10. (C)  $(5c4)A$     $(2B3)B6$   
 $= (5 \times 4) - (2 + 3) + 6$   
 $= 20 - 5 + 6 = 21$
11. (B)
 

1	2	3	6	9	18	<b>27</b>	54
	×2	×1.5	×2	×1.5	×2	×1.5	×2
12. (C)  $(5 \times 4) + (1 + 3) = 23$   
 $(7 \times 6) + (3 \times 4) = 54$   
 $(11 \times 2) + (2 \times 9) = 40$
13. (D)
 

Z	U	Q	N	L
	+5	+4	+3	+2
14. (A)  $ab \underline{c} b / abc \underline{b} / ab \underline{c} b / \underline{a} bcb / \underline{a} b$
15. (A)
 

I. ✓

II. ✗

III. ✗

IV. ✗
16. (C) Word 'R' of **secret** is not present in 'ADOLESCENT'.
17. (B)  $1 + (4 \times 2) = 9$   
 $2 + (8 \times 2) = 18$   
 $3 + (6 \times 2) = 15$   
 $7 + (8 \times 2) = 23$
18. (B)  $6 \times 2 \times 3 \times 5 = 180 \Rightarrow \frac{180}{20} = 9$

- $3 \times 5 \times 6 \times 4 = 360 \Rightarrow \frac{360}{20} = 18$
- $4 \times 9 \times 3 \times 5 = 540 \Rightarrow \frac{540}{20} = 27$
- $2 \times 7 \times 4 \times 5 = 280 \Rightarrow \frac{280}{20} = 14$
19. (B)  $5 \times 7 \times \sqrt{9} = 35 \times 3 = 105$   
 $7 \times 11 \times \sqrt{9} = 77 \times 3 = 231$   
 $11 \times 13 \times \sqrt{9} = 143 \times 3 = 429$
20. (C)
 

A N C I E N T	N A T U R E
2 5 1 6 8 5 9	5 2 9 0 4 8
then T R A I N	
<b>9 4 2 6 5</b>	
21. (B) The number which shows hardworking people who are intelligent, but not sincere is **2**.
22. (C)  $13 \times 5 + 5 = 15 \times 5 - 5$
23. (A) Given  $2 \times 3 + 6 - 12 \div 4 = 17$   
After interchanging the sides  
 $2 + 3 \times 6 - 12 \div 4$   
 $= 2 + 18 - 3 = 17 = \text{R.H.S}$
24. (D)
 

The photograph is of X's mother. But the gender X is not decided, so X can either be son or daughter of the person in photograph.
25. (D) 11, 65, 12, 20, 56
26. (B)  $35 = \text{THIRTY FIVE} = 8$  different letters  
 $58 = \text{FIFTY EIGHT} = 7$  different letters
27. (B)
 

E V I L	L I V E
1 2 3 4	4 3 2 1
R O A R	<b>R A O R</b>
1 2 3 4	4 3 2 1
28. (A) Gandhi Jayanti is celebrated on 2<sup>nd</sup> October and **Republic day** is celebrated on 26 January.
29. (B)  $H_2SO_4$  is the chemical formula of Sulphuric acid and **HNO<sub>3</sub>** is the chemical formula of Nitric acid.
30. (C) Except **Moral science**, other three comes under Social science.
31. (D) Except **DLCR**, we can find one vowel in rest of the options.
32. (D) **No. Factors (f) N(f)**

24	1, 2, 3, 4, 6, 12, 24	7
15	1, 3, 5, 15	4
27	1, 3, 9, 27	4
30	1, 2, 3, 5, 6, 15, 30	7 ≠ 8

33. (C)

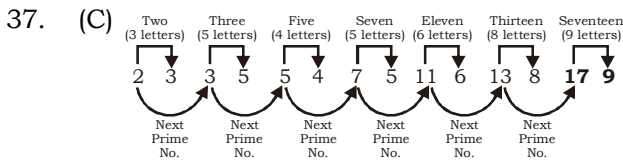
Words	Vowels used (No.)	(No.) <sup>3</sup>	No. of Letters	Result
January	AU (2)	2 <sup>3</sup> = 8	7	87
February	AEU (3)	3 <sup>3</sup> = 27	8	278
August	U (1)	1 <sup>3</sup> = 1	6	16 ≠ 86
December	E (1)	1 <sup>3</sup> = 1	8	18

34. (B)

Words	No. of vowels	Result
ZILA GAZIABAD	6	6 <sup>3</sup> - 6 <sup>2</sup> = 216 - 36 = 180
MUMBAI MIRROR	5	5 <sup>3</sup> - 5 <sup>2</sup> = 125 - 25 = <b>100</b>

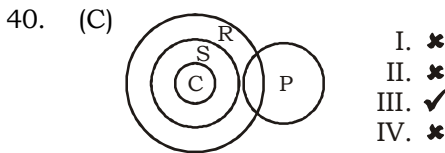
35. (C) After substituting the signs as per the given direction.  
(3C9)A (4B6) B6  
= (3 × 9) - (4 + 6) + 6  
= 27 - 10 + 6  
= **23**

36. (A) 8 × 5 + 1 = 41  
41 × 4 + 2 = 166  
166 × 3 + 3 = 501  
501 × 2 + 4 = **1006**  
1006 × 1 + 5 = 1111

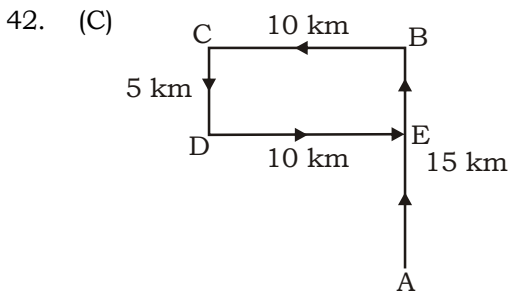


38. (B) 8 + 6 = 14 ⇒ 14 3 ⇒ 143  
9 + 2 = 11 ⇒ 11 7 ⇒ 117  
3 + 5 = 8 ⇒ 8 **2** ⇒ 82

39. (D) ab c / a a bc / a b b c / ab c c



41. (C) We can't find 'E' in the given word RIDICULOUS.



Finally, Akhilesh is in the **North** of his

house.

43. (A) 12 ⇒ 12<sup>3</sup> = 1728 ⇒ 12<sup>2</sup> = 144  
09 ⇒ 09<sup>3</sup> = 0729 ⇒ 09<sup>2</sup> = 081  
13 ⇒ 13<sup>3</sup> = 2197 ⇒ 13<sup>2</sup> = **169**

44. (A) (3 × 5)<sup>2</sup> = 15<sup>2</sup> = 225  
(2 × 4)<sup>3</sup> = 8<sup>3</sup> = 512

$$(9 \times 4)^{1.5} = (36)^{\frac{3}{2}} = (6)^{2 \times \frac{3}{2}} = 6^3 = \mathbf{216}$$

45. (B) Only daughter of my mother = Kamal's Sister  
Kamal's Sister is Jitendra's Mother  
So Kamal is **maternal uncle** of Jitendra as well as his sister.

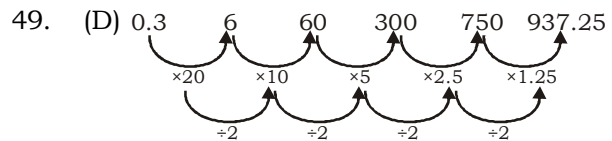
46. (C)

Top	6 / 3	1	4
Bottom	6	2	5

The digit on the top of the surface will be **3**, when the digit at the bottom is 6.

47. (C) 5 × 6 + 3 = 8 × 5 - 7

48. (A) 3 + 4 × 6 - 4 × 5 = 7



51. (A) 9-time Olympic gold medallist, Usain Bolt from Jamaica has won the International Association of Athletics Federations (IAAF) male Athlete of the Year award for a record sixth time. Beside him, Ethiopia's Almaz Ayana, who broke the 10,000m world record by over 14 seconds in winning Olympic gold in 2016 Rio Olympics, won the 2016 IAAF female Athlete of the Year award. The awards were handed out by IAAF at a gala ceremony in Monaco.

52. (B) The Indian Council of Medical Research (ICMR) is the apex body in India for the formulation, coordination and promotion of biomedical research. It is in news because ICMR has recently signed a MoU with Indian Council of Agricultural Research (ICAR) for cooperation in the area of Zoonoses, antimicrobial resistance, nutrition and pesticide residues. This MoU will strengthen the ties between the two organizations and energize environment of mutual cooperation and collaboration. The headquarters of ICMR is located in New Delhi.

53. (A) Ninth Schedule was added by First Amendment Act of 1951, which relates to Land Reforms.

54. (A) Project Elephant was launched in 1992 by the Government of India Ministry of Environment and Forests to provide financial and technical support of wildlife management efforts by states for their free ranging populations of wild Asian Elephants.
55. (C) Phulel Singh Sujlana, the former international hockey umpire and veteran administrator, has recently passed away, according to Mumbai Hockey Association Limited. Sujlana was the chairman of the Indian Hockey Federation (IHF) Umpires Board from 1985 to 1993 and chairman of its Technical Committee in 1985.
56. (B) Nagara, Dravida and Vesara are three main styles of Indian temple architecture.
57. (A) India's first and Asia's longest cycle highway has been opened in Uttar Pradesh. The 207-km-long cycle highway runs between Etawah and Agra. It was inaugurated by state Chief Minister Akhilesh Yadav. It is about 7-feet-wide and is separated by a divider from main highway which ensures the safety of cyclists.
58. (C) Mahatma Gandhi undertook fast unto death in 1932, against Ramsay Macdonald's Announcement of the Communal Award.
59. (C) The National Pollution Control Day (NPCD) is celebrated every year on December 2 in India with an aim to make aware the people and industries about the need of Pollution Control Acts. This day is observed in the memory of those who lost their lives in 1984 due to the Bhopal gas tragedy and who was left severely affected due to leakage of poisonous gas "Methyl Isocyanate (MIC)" from Union Carbide plant in Bhopal. This catastrophe was the worst in the world's industrial history and people there still continue to witness physical and mental disabilities.
60. (D) O. Schmidt in 1943 gave Inter-Stellar Dust Hypothesis for the origin of the earth and solar system.
62. (B) The Palk Strait separates India and Srilanka. It lies between the Gulf of Mannar and the Bay of Bengal.
63. (C) Rakesh Asthana, the 1984 batch IPS officer of Gujarat-cadre, has been appointed as the interim Director of the Central Bureau of Investigation (CBI). He succeeded Anil Kumar Sinha. It is the first time in last 10 years that no new CBI chief has been named to succeed the current chief. The CBI chief is selected through a collegium comprising the Prime Minister, the Leader of Opposition or largest party in opposition in Lok Sabha and the Chief Justice of India. The collegium has not been able to meet.
64. (D) Survey of India, The National Survey and Mapping Organization of the country under the Department of Science and Technology, is the oldest scientific department of the Govt. of India. It was set up in 1767.
66. (D) PN Bhagwati was CJI during July 1985-Dec 1986. During his tenure as CJI, PIL was introduced to the Indian judicial system.
68. (D) Through Corbett National Park Ramganga flows (not Ganga) which is a tributary of Ganges. Through Silent Valley National Park River Bhavani flows which is a tributary of Kaveri. Kaziranga and Manas are both national parks.
74. (B) In financial accounting, a balance sheet or statement of financial position is a summary of the financial status of an organisation which can be a sole proprietorship, a business partnership or a company. Assets, liabilities and ownership of equity are listed as on a specific date, which is normally the end of the financial year. A balance sheet is the "snapshot of a company's financial condition".
76. (D) Graphite is a good conductor of heat and electricity because of their bonding. The free electrons are able to move very freely. Since electricity and heat need electrons to move, the bonding promotes conductivity.
77. (D) Article 16 gives the guarantee of equality of opportunity in matters of public employment. Article 16(1) & 16(2) have laid down a general rule that there shall be equal opportunity for all citizens and thus emphasizes universality of Indian Citizenship. However, further section of Article 16 provides the exceptions.
- Article 19: Protection of certain rights regarding freedom of speech, etc.
  - Article 15: Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth.
  - Article 14: Article 14 provides equality before the law & equal protection within the territory of India.
79. (D) It is published by Ministry of Statistics and Programme Implementation, Central Statistical Organization.
81. (A) The 42<sup>nd</sup> Amendment added secular and socialist character to Indian Republic. It is specially relevant because our neighboring countries like Afghanistan, Bhutan, Bangladesh, Nepal, Pakistan and Sri Lanka have opted for the theocratic model of their

states. The bewildering diversities of religion, caste, creed, language and ethnic groups make it imperative upon the Indian state to develop a secular ethos of pluralism and multi-religious society over the sub-continent.

- 44<sup>th</sup> amendment: Amendment passed after revocation of internal emergency in the Country. It was provided for human rights safeguards and mechanisms to prevent abuse of executive and legislative authority.

- 43<sup>rd</sup> amendment: Amendment passed after revocation of internal emergency in the Country. Repeals some of the more 'Anti-Freedom' amendments enacted through Amendment Bill 42.

- 45<sup>th</sup> amendment: Extends reservation for SC/ST and nomination of Anglo Indian members in Parliament and State Assemblies for another ten years i.e. up to 1990.

83. (D) Durand Line is the line demarcating the boundaries of Pakistan and Afghanistan. It was drawn up in 1896 by Sir Mortimer Durand.

- Radcliffe Line drawn up by Sir Cyril Radcliffe, demarcated the boundary between India and Pakistan.

86. (C) The Union IT Minister Ravishankar Prasad has recently launched "Digidhan Abhiyan" to enable every citizen, small traders and merchants to adopt digital payments in their everyday financial transactions. During the campaign, citizens will be informed about various modes of digital payments by educating them to download, install and transact digital payments. Beside this, the IT Minister has also launched Digishala TV Channel. It is a free-to-air channel which will educate people about digital payment and is available on DTH service. The channel will encourage people for digital payment in their everyday life. The channel will be airing shows targeted at the rural and suburban population to inform them of various aspects of going digital like e-wallet, UPI, USSD, AADHAAR and usage of cards through talk shows and demonstrations. The services will initially be available in Hindi and English and later in local languages as well.

87. (A) The Sardar Patel Cricket Stadium in Ahmedabad, popularly known as Motera Stadium, is set to become the world's largest seating capacity cricket stadium. Presently,

the stadium can house 54,000 people, but with the new plans, it is projected to have a capacity of about 1,10,000 people. This will almost double its seating capacity and will surpass the Melbourne Cricket Ground, which has a capacity of 1,00,024 people.

88. (A) Hwang Kyo-ahn, who is the South Korean Prime Minister, has become the acting President after Parliament voted to impeach President Park Geun-hye on December 9, 2016 over a corruption scandal.

89. (B) Person having blood group 'AB' is called universal recipient because the 'AB' blood group has no antibody in the blood plasma. So, the person can accept any type of blood group (i.e. A, B or O).

90. (D) The Internet and Mobile Association of India (IAMAI) has recently constituted committee to fight against the menace of online piracy. The committee will be chaired by Ajit Mohan of Hotstar and co-chaired by Uday Sodhi of SET India and Salil Kapoor of HOOQ. The mandate of the committee is to safeguard the interest of the digital entertainment businesses.

91. (D) Indian Golfer Mukesh Kumar has won the 2016 Panasonic Open India golf title at Delhi Golf Club (DGC). With this win, he became the oldest golfer to win an Asian Tour title at the age of 51 years and 126 days.

92. (A) He was a resident of Bombay Presidency, but was elected to Constituent Assembly from West Bengal.

93. (C) The book "Dipa Karmakar: The Small Wonder" has been authored by sports journalists Vimal Mohan, Digvijay Singh Deo and Dipa Karmakar's coach Bishweshwar Nandi. The book will have many untold stories of struggle and triumph besides rare archival photos from the Karmakars' private album as well as competition photos from the Olympics and Commonwealth Games. The book is set to release on August 2017.

94. (B) The capital of the Hoysalas was initially located at Belur but was later moved to Halebid.

96. (A) Heavy water can serve as a neutron moderator in a nuclear reactor, which slows down fast particles and encourages the fission reaction. Neutrons in a fission reaction travel either fast or slow. The fast neutrons tend to be absorbed by certain isotopes of uranium rather than continuing



# KD Campus Pvt. Ltd

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

the fission reaction, but the larger deuterium atoms in heavy water help slow down these fast neutrons, ensuring they continue the chain reaction.

97. (B) The Committee on Digital Payments headed by Ratan Watal has submitted its final report to the Union Finance Minister Arun Jaitley in his office in New Delhi. The committee has recommended a medium term strategy for accelerating growth of Digital Payments in India with a regulatory regime which is conducive to bridging the digital divide by promoting competition, open access & interoperability in payments.

98. (C) Ghiyasuddin Tughlaq founded Tughlaq dynasty in 1320 AD (CE). Nasiruddin Mahmud was the last ruler of Tughlaq dynasty (1395-1412 AD).

99. (D) The Major Rock Edict XIII of Ashokan inscription mentions Asoka's victory over Kalinga and names of Greek Kings such as Antiochus, Ptolemy, Antigonus, Magas and southern Indian rulers such as Cholas, Pandyas. It has also mentioned the names of Kamboj, Nabhaks, Bhoja, Andhra, etc.

100. (B) Inflation is a condition, when cost of services coupled with goods rise and the entire economy seems to go haywire. Inflation has never done good to the economy. Whenever there is expected inflation, governments around the world take appropriate steps to minimize the ill effects of inflation to a certain extent.

106. (B)
- $D_1 = 50 \text{ cm.} \quad l_1 = 1800\text{m.}$   
 $D_2 = 40 \text{ cm.} \quad l_2 = 1200\text{m.}$   
 $D_3 = 30 \text{ cm.} \quad l_3 = 600\text{m.}$   
 $D = 40 \text{ cm.} \quad l = ?$

$$\frac{L}{(D)^5} = \left[ \frac{l_1}{(D_1)^5} + \frac{l_2}{(D_2)^5} + \frac{l_3}{(D_3)^5} \right]$$

$$\frac{L}{(40)^5} = \left[ \frac{1800 \times 100}{(50)^5} + \frac{1200 \times 100}{(40)^5} + \frac{600 \times 100}{(30)^5} \right]$$

$$\frac{L}{(40)^5} = \left[ \frac{9}{15625} + \frac{3}{2560} + \frac{2}{405} \right]$$

$$\frac{L}{(40)^5} = (0.00058 + 0.00117 + 0.00247)$$

$$L = 4320\text{m.}$$

106. (C) Work amount is defined as the  $w = f \times d$  where  $d$  = displacement in direction of force applied.

107. (D)  $\tau = \eta \cdot \frac{dv}{dx}$   
 $= \frac{m^2}{\text{sec}^2}$

115. (D) Static pressure of pitot tube =  $H_s = 10\text{m}$   
Dynamic pressure of pitot tube =  $H_v = 0.75\text{m}$

$$\text{Velocity of water} = \frac{H_s \times H_v}{2}$$

$$= \frac{10 \times 0.75}{2} = 3.83 \text{ m/s}$$

120. (B) Per second deliver weight of water (W) =  $600 \times 1000 \times 98$   
=  $588000 \text{ N/S}$

$$p = \frac{W \times H}{1000}$$

$$= \frac{588000 \times 60}{1000} = 588 \times 60 \text{ Kw}$$

$$\text{efficiency} = \frac{\text{given power to water}}{\text{given power to pump}}$$

$$60 = \frac{588 \times 60}{588 \times 60 \text{ pump}}$$

given power to pump

$$= \frac{588 \times 60}{60} = 588 \text{ kw}$$

121. (B) Since, 1 foot = 12 inch  
& 1 inch = 2.54 cm  
So, 1 inch = 50 ft =  $50 \times 12 = 600$  inch  
& 1 cm = 6 m = 600 cm  
1 inch = 600 inch

125. (C) Deflection angle are angles when line makes it with prelongnition of proceeding line.

126. (A) Correction in chaining along a slope =  $L(\sec \theta - 1)$

129. (D) Two rods = for end stations & Two rods = for intermediate stations (one follower & one leader)

130. (C)  $A = 2\text{cm}^2$   
=  $2 \times 10^2 \text{mm}^2$

$$\text{Stress} = \frac{\text{force}}{\text{Area}} = \frac{4000}{2 \times 10^2} = 200 \text{ N/mm}^2$$

$$E = \frac{\text{stress}}{\text{strain}}$$

$$2 \times 10^5 = \frac{\text{stress}}{\frac{\Delta L}{L}}$$

$$\Delta L = \frac{\text{stress} \times L}{2 \times 10^5}$$

$$= \frac{200 \times 1000}{2 \times 10^5}$$

$$= \frac{2 \times 10^5}{2 \times 10^5}$$

$$\Delta L = 1 \text{ mm}$$

132. (A) True bearing = magnetic bearing  $\pm$  declination =  $32^\circ - 10^\circ 15'$   
=  $21^\circ 45'$

134. (C) If chain is short then measured distance will be long (more)  
So, Chain is short by 0.01 m from 30 m. then error = measured distance - true distance (less) = +ve (cumulative)

135. (B) W.C.B = 120  
R.B = 180 - 120  
= 60  
S60E

138. (B)  $S = \frac{A_{sv} \times \sigma_{sv} \times d}{V}$

$$S = \frac{56.54 \times 140 \times 1000}{70 \times 1000}$$

$$\cong 114 \text{ mm}$$

$$\left\{ A_{sv} = \frac{\pi d^2}{4} \times 2 = \frac{3.141 \times 36 \times 2}{6} \right.$$

$$= 56.54 \text{ mm}^2$$

145. (C)  $M = 180 \text{ Km}^2$   
 $C = 16$   
 $Q = C \text{ m}^{3/4}$   
=  $16 \times 49.14$   
=  $786.27 \text{ m}^3/\text{s}$

155. (D) Total tension =  $\rho gh$   
=  $1000 \times 10 \times 5 \text{ N/m}^2$

$$= 5000 \times \frac{1}{10^4} \text{ kg}$$

$$= 0.5 \text{ kg/cm}^2$$

effective tension will be zero.

164. (A) A portion of a beam between two section is set to be in pure bending when there is constant bending moment and zero shear force.

171. (B) The phenomenon of slow growth of strain under a steady tensile stress is called creeping.

172. (A)  $h = 40\%$

$$e = \frac{n}{1-n} = \frac{0.40}{1-0.40} = 0.6667$$

$$\gamma_d = \frac{G\gamma_w}{1+e} = \frac{2.70 \times 9.81}{1+0.6667}$$

$$= 15.89 \text{ kN/m}^3$$

175. (A) By first condition

$$y_1 = \frac{w_1 l_1^3}{48EI} \text{ On point load to S.S.B}$$

$$y_2 = \frac{w_2 l_2^3}{48EI}$$

$$\therefore l_2 = l_1$$

$$w_1 = 20 \text{ kN}$$

$$w_2 = 40 \text{ kN}$$

$$y_1 = 2 \text{ mm}$$

$$y_2 = ?$$

$$y = \frac{20 \times l_1^3}{48EI} = \frac{40 \times l_2^3}{48EI} = y_2$$

$$\frac{y_1}{y_2} = \frac{20 l_1}{48EI} = \frac{40 \times EI}{48 l_2} = \frac{20}{40} = \frac{1}{2}$$

$$\frac{y_1}{y_2} = \frac{1}{2}$$

$$\frac{2}{y_2} = \frac{1}{2}$$

$$y_2 = 4 \text{ mm}$$

176. (A) The angle of internal friction  $\phi$  for cohesive soil is equal to zero.

185. (D) Diamond will have large shape factor.

196. (B) Increase in fineness modulus of aggregate indicate coarser grading.

200. (D) A precast pile generally used is square with corners chamfered.