



# KD Campus Pvt. Ltd

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

## Answer-key & Solution

SSC JE (Mechanical)  
MOCK -(97)  
Date 13.5.2017

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

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

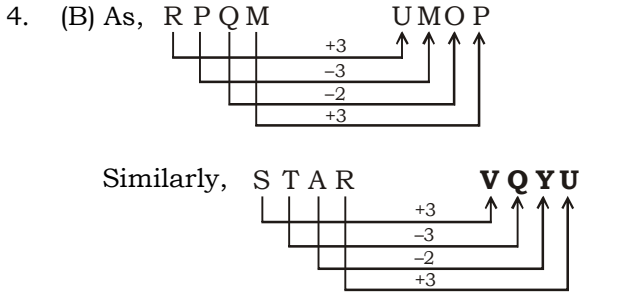
**Note :** If you face any problem regarding result or marks scored, please contact : 9313111777

1. (C) 

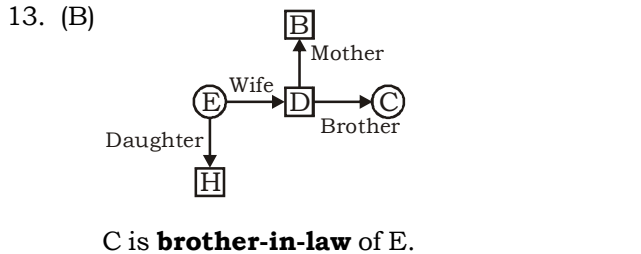
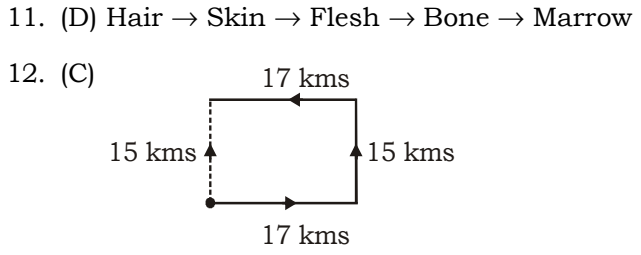
C	E
position	
3	5
↓+1	↓-1
4	4

H	F
position	
8	6
↓+1	↓-1
9	5

2. (D) Ramcharitmanas was written by Tulsidas and Mahabharat was written by **Vedvyas**.  
 3. (B)  $52 \Rightarrow 5^2 \times 2^3 = 25 \times 8 = 200$   
 $43 \Rightarrow 4^2 \times 3^3 = 16 \times 27 = 432$

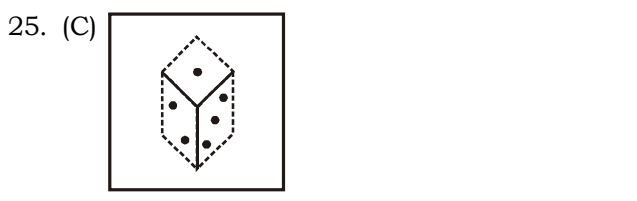
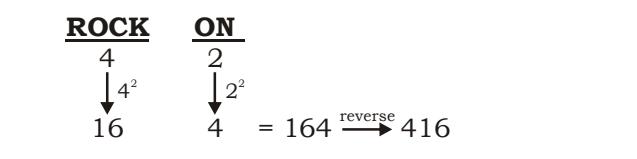
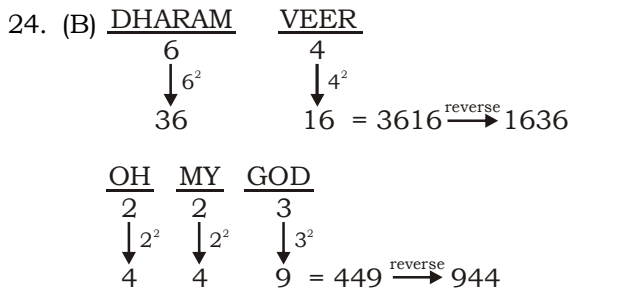
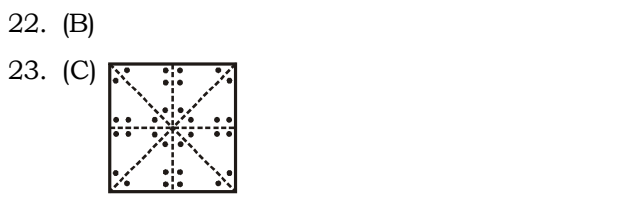
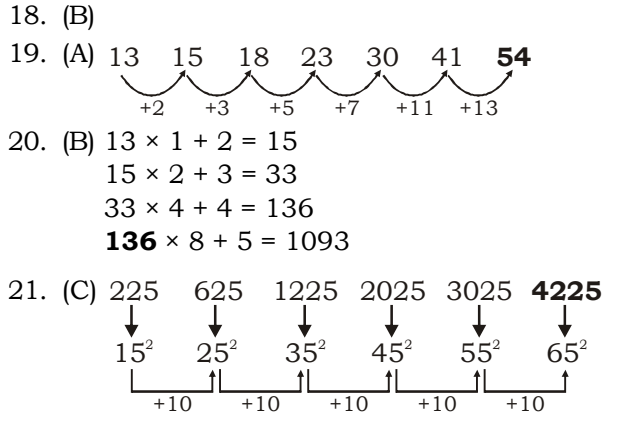


5. (D) Except (D), others are perfect cube.  
 6. (D) Except **fish**, other lives on both land and water.  
 7. (A) Except (A), In others the two given numbers are squares of consecutive natural number.  
 8. (C) First letter moves 3 step forward and second letter moves 2 step backward.  
 9. (C) RED  $\Rightarrow$  DER  $\Rightarrow 4 - 5 - 18 \Rightarrow 6 - 7 - 20$   
 GREEN  $\Rightarrow$  NEERG  $\Rightarrow 14 - 5 - 5 - 18 - 7 \Rightarrow 16 - 7 - 20 - 9$   
 10. (B) The order from the tallest to the shortest would be-  
 Beena  $\rightarrow$  Reena  $\rightarrow$  Chitra  $\rightarrow$  Sheena  $\rightarrow$  **Meena**



14. (A)  $\sqrt{\sqrt{256 \times 81}} = \sqrt{16 \times 9} = 12$   
 $\sqrt{\sqrt{16 \times 625}} = \sqrt{4 \times 25} = 10$

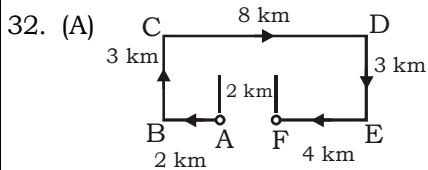
- $\sqrt{\sqrt{625 \times 81}} = \sqrt{25 \times 9} = 15$
15. (C)  $\sqrt{8+5+12} = \sqrt{25} = 5$   
 $\sqrt{14+16+6} = \sqrt{36} = 6$   
 $\sqrt{22+19+23} = \sqrt{64} = 8$
16. (A) a **b/n c b/ a b/ n c b/ a b/ n c b**  
 17. (C) Number of squares  
 $= 1^2 + 2^2 + 3^2 + 4^2 + 5^2 = 55$



26. (A) Second is the feminine gender of the first.  
27. (B) There are waves in the oceans and **sand dunes** in the desert.

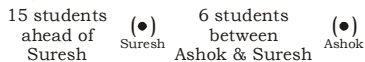
28. (C)  $38 \Rightarrow 3 \times \frac{8}{2} = 12 \Rightarrow 12^2 = 144$   
 $54 \Rightarrow 5 \times \frac{4}{2} = 10 \Rightarrow 10^2 = 100$

29. (A) All except **Vapour** are different forms of Precipitation.  
30. (D) Except **Shout**, others are sound related to animals.  
31. (C) Except **LAZINESS**, the other words contain all vowels.



$\therefore$  Required distance =  $8 - (4 + 2) = 2 \text{ kms}$

33. (C) Lady will bake in an oven and oven is called **grinder**.  
34. (D) From the given data we can find that (A, E) are the couple and has two child F and C. Also (B, D) are the couple with G as their child. As it is given that there are three children in the family, in which F is a girl, so C will definitely be a boy to satisfy one boy and one girl condition. So we can say that C is **A's son**.  
35. (B)  $15 + \text{Suresh} + 6 + \text{Ashok} + 16 = 39$



22 students ahead of Ashok  
16 students behind Ashok

The rank of Suresh from the start is **23<sup>rd</sup>**.

36. (A) The first, second and third letters move three steps forward, four steps backward and two steps forward respectively. So, the required answer is **NHR**.  
37. (B) The series consists of two groups (M, O, R, V) and (N, L, I, ?). The letters in the first group move 2, 3, 4, ... steps forward. The letters in the second group move 2, 3, 4, ... steps backward. So **E** is the required answer.  
38. (C)  $2 \times 0.25 + 0.5 = 1$   
 $1 \times 0.5 + 1.5 = 2$   
 $2 \times 0.75 + 2.5 = 4$   
 $4 \times 1 + 3.5 = 7.5$   
 $7.5 \times 1.25 + 4.5 = 14.75$   
39. (D) **2 → 3 → 5 → 4 → 1**  
40. (B)  
41. (D) There is no **C** in DISSEMINATION.  
42. (D) The sequence in the differences of the numbers is 7, 5, 3, 1, -1. Substituting **35** instead of 36 will satisfy the sequence.  
43. (D)  $12^2 = 144$   
 $25^2 = 625$   
 $19^2 = 361$   
 $17^2 = 289$   
44. (B)  $2^3 + 3^2 + 4^1 = 21$   
 $1^3 + 3^2 + 5 = 15$   
 $3^3 + 4^2 + 2 = 45$   
45. (A)  $(3 + \underline{2}) \times 4 = 20$

$(5 + \underline{2}) \times 6 = 42$   
 $(1 + \underline{2}) \times 2 = 6$   
 $(7 + \underline{2}) \times 8 = 72$

46. (D)

Words	No. of letters (A)	(A) <sup>2</sup>	Reverse of (A) <sup>2</sup>
Behind	6	36	63
Every	5	25	52
Successful	10	100	001
Man	3	09	90
There	5	25	52
is	2	04	40
a	1	01	10
Woman	5	25	52

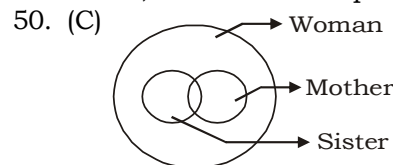
$\Rightarrow$  Behind every successful man there is a woman = 63520019052401052

Words	No. of letters (A)	(A) <sup>2</sup>	Reverse of (A) <sup>2</sup>
Empty	5	25	52
Vessels	7	49	94
Makes	5	25	52
Much	4	16	61
Noise	5	25	52

$\Rightarrow$  Empty vessels makes much noise = **5294526152**

47. (D)  $12 \times 7 = 84 \Rightarrow 8\underline{0}4 \xrightarrow{\text{Reverse}} 408$   
 $9 \times 8 = 72 \Rightarrow 7\underline{0}2 \xrightarrow{\text{Reverse}} 207$   
 $13 \times 7 = 91 = 9\underline{0}1 \xrightarrow{\text{Reverse}} 109$

48. (C)  
49. (B)  $1, 1 \times 2, 1 \times 3 \Rightarrow 1 \ 2 \ 3$   
 $2, 2 \times 2, 2 \times 3 \Rightarrow 2 \ 4 \ 6$   
 $3, 3 \times 2, 3 \times 3 \Rightarrow 3 \ 6 \ 9$   
So, 9 box is the required answer.



Some sister may be mother and vice-versa. Also, some mothers may not be sisters and vice-versa. But all sisters and mothers belong to woman group.

51. (B) Sunway Taihulight has been named as the world's fastest supercomputer title, as per recently released semiannual Top 500 list of supercomputers. It is developed by the China's National Research Centre of Parallel Computer Engineering and Technology (NRCPC). Taihulight can perform 93 quadrillions calculations per second

- (petaflop/s). It is intended for use in research and engineering including climate, weather, life sciences, advanced manufacturing and data analytics. The TOP 500 list is considered as one of the most authoritative rankings of the world's supercomputers. It is compiled on the basis of the machines' performance on the Linpack benchmark by experts from U.S. and Germany.
52. (C) Main purpose of these Committees is to provide a forum for informal discussions between the Government and Members of Parliament on policies and programmes of the Government and the manner of their implementation.
53. (B) Frequency Modulation: It is a process in which the frequency of the carrier is varied in accordance with the instantaneous value of modulating voltage. In telecommunications and signal processing, frequency modulation (FM) conveys information over a carrier wave by varying its instantaneous frequency. FM is most commonly used for radio and television broadcasting.
54. (D) The 2016 Great Indian Film and Literature Festival (GIFLIF) will be held at DLF Cyber Hub in Gurugram, Haryana from December 2 to showcase the vernacular spirit of Indian film and literature. The three day festival will include panel discussions on an array of themes ranging from filmmaking, digital media, advertising, publishing, literature, script writing and film screenings, besides a play and a music concert.
55. (D) The Convention on the Rights of the Child (adopted on Nov. 20, 1989) is the first legally binding international instrument to incorporate the full range of human rights i.e. civil, cultural, economic, political and social rights.
57. (C) The book "A Season of Ghosts" has been authored by Ruskin Bond. It is an entertaining book, which includes interesting short stories about the mists and mellow magic of Bond's beloved mountains.
58. (A) Haryana sprinter Dharambir Singh is in news because he has been slapped an eight year ban by the National Anti-Doping Agency (NADA) because of his second dope-related offence. Earlier, he was barred from representing India in the 2016 Rio Olympics at the last minute for failing a dope test.
59. (A) The second national highway of Indian NH-6 is the major project of National Highway network of India. NH-6 run through the west to east corner of India via 6 states as well as many cities and towns. Length of Kolkata-Hajira NH - 1949 km.
61. (A) Temperature coniferous forests covers the highest percentage of forest area in the world.
62. (C) Recently, the Ministry of AYUSH has decided to set up a central regulatory structure for AYUSH drugs as a part of Central Drugs Standard Control Organization (CDSCO) to enforce the provisions for Ayurvedic, Siddha, Unani and Homoeopathic drugs in coordination with the State regulatory authorities. The CDSCO is the national regulatory body for Indian pharmaceuticals and medical devices and its headquarters is located at New Delhi.
63. (A) The 2016 World Travel Market (WTM), the leading global event for the travel industry, has started in London, United Kingdom (UK). The 3-day business-to-business exhibition for the worldwide travel and tourism industry will be attended by almost 50,000 senior travel industry professionals, government ministers and international press. Ministry of Tourism, Government of India (GoI) has participated as Official Premier Partner at WTM London 2016.
64. (A) An optical fiber is a thin, flexible, transparent fiber that acts as a wave guide or "light pipe" to transmit light between the two ends of the fiber. An optical fiber transmits light along its axis, by the process of total internal reflection. When light traveling in a dense medium hits a boundary at an angle larger than the "critical angle" for the boundary, the light will be completely reflected. This effect is used in optical fibers to confine light in the core.
65. (D) Article 67(b) in the Constitution of India states that a Vice President may be removed from his office by a resolution of the council of States passed by a majority of all the members of the council and the House of the People, but no resolution for the purpose of this clause shall be moved unless atleast fourteen days notice has been given of the intention to move the resolution.
66. (A) Blue green algae is used as a biofertilizer in rice crop. Blue green algae has the nitrogen fixing ability which enhances the production of rice.
67. (D) Haemophilia is a sex-linked recessive disorder. Clotting of blood is abnormally delayed in such a way that even a simple or small cut will result non stop bleeding in affected individual.


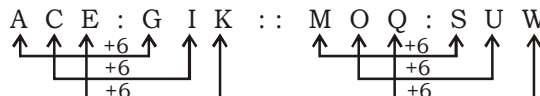
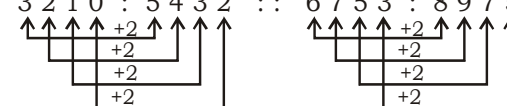
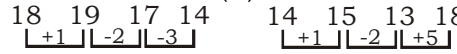
68. (B) The Battle of Haldighati was fought between the Mughal Empire and the forces of Mewar on June 21, 1576 at Haldighati in Rajasthan, India. It was a decisive victory for the Mughal Emperor Jalal ud-Din Muhammad Akbar's general Raja Man Singh against the Maharana Pratap Singh of Mewar. Akbar was 14 years old when he was crowned at Kalanaur in 1556.
69. (C) On 12 March, 1930, Gandhi started his civil disobedience movement by starting Dandi March from Sabarmati Ashram in Gujarat and reached Dandi on 6 April 1930 and broke the salt law.
70. (C) Creating firework colours is a complex endeavour, requiring considerable art and application of physical science. Strontium and barium both are alkaline earth metal and are extremely reactive. They both impart characteristic colour to flame. Strontium salts impart a red color to fireworks. Strontium compounds are also important for stabilizing fireworks mixtures. Barium is used to create green colors in fireworks, and it can also help stabilize other volatile elements.
72. (B) The Union Government has hiked Rs. 100 per quintal in wheat Minimum Support Price (MSP) to Rs. 1,625 per quintal for the 2016-17 and pulses by up to Rs. 550 per quintal to boost the output of these rabi (winter- sown) crops and check prices. Apart from this, MSP on Gram has been hiked to Rs. 4,000 per quintal including bonus, from 3,500 rupees per quintal, while MSP of Masur has been raised to Rs. 3,950 per quintal from Rs. 3,400. The support price on Mustard and safflower has been hiked to Rs. 3,700 per quintal each. On Barley the support price has been increased to Rs. 1,325 from Rs. 1,225 per quintal. To incentivize cultivation of pulses and oilseeds, CCEA also announced a bonus on these crops over and above MSP. The MSP is the rate at which government buys the grain from farmers.
73. (D) RDX, initialism for Research Department Explosive, is an explosive nitroamine widely used in military and industrial applications. It is also known less commonly as cyclonite. Its chemical name is cyclotrimethylene trinitramine.
77. (D) Antigen is a foreign molecule, which invade the body of an organism, and induce immune response to stimulate antibody.
78. (D) The Government of India (GoI) has constituted a committee of officers to enable 100 % conversion of Government - Citizen Transactions to the digital platform. The committee, under the leadership of NITI Aayog CEO Amitabh Kant, will identify and operationalize various digital payment systems appropriate to different sectors of the economy and coordinate efforts to make them accessible and user-friendly. The committee will also identify and access infrastructural and bottlenecks affecting the access and utility of digital payment options.
79. (A) Fuel value can be expressed in terms of calorific value of fuel. The calorific value of a fuel is the amount of heat produced by burning 1 kg of fuel. Hydrogen has the highest calorific value of (141,790 KJ/kg) thus have highest fuel value. Calorific value of charcoal, natural gas and gasoline are (29,600; 43,000; 47,300 kJ/ kg) respectively. Natural gas mainly consists of Methane.
81. (A) Magnetic quantum number represents the number of orbital's present in the sub-shell magnetic quantum number about the orientation of the orbital.
83. (B) The Palampur Assembly Constituency has become the India's first e-assembly constituency at Kangra district in Himachal Pradesh. Now, the resident of constituency would not only know about the development works going on by one click on computer but they would also send their requirement about funds for different schemes in their respective areas online. This system would be introduced in other 67 constituencies of the state in next 6 months.
84. (B) The 2016 International Day for the Elimination of Violence against Women is observed every year on November 25 to raise public awareness of violence against women. The 2016 theme is "Orange the World - raise funds to end violence against women" in which orange colour designated the UNiTE campaign to symbolize a brighter future without violence.
85. (B) The book "Banaras City of Light" has been authored by Diana L. Eck. It is about the spiritual and historical aspects of the city.
86. (C) According to evolution of living organisms Salamander-Python-Kangaroo, because the evolution started from amphibians 350 million years ago, reptiles appeared 300 million years ago and 200 million years ago first small mammals appeared.



# KD Campus Pvt. Ltd

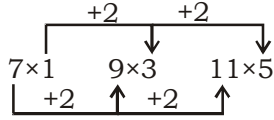
2007, OUTRAM LINES, 1ST FLOOR, OPPOSITE MUKHERJEE NAGAR POLICE STATION, DELHI-110009

87. (B) Airtel Payments Bank Limited (or Airtel Bank), a subsidiary of Bharti Airtel Limited has launched India's first payment bank with 7.25% interest on savings accounts as a pilot basis of its banking services in Rajasthan. Airtel Bank's services can be accessed by Airtel customers on their mobile phones through the Airtel Money app, through USSD by dialing \*400#; or via a simple IVR by dialing 400. Both the USSD & IVR options are available in Hindi and English language and work on simple feature phones as well. The non-Airtel customers can access Airtel Bank's services by dialing 8800688006.
88. (D) By-products of thermal power plant operation need to be considered in both design and operation. Waste heat due to the finite efficiency of the power cycle must be released to the atmosphere, using a cooling tower, or river or lake water as a cooling medium. The gas from combustion of the fossil fuels is discharged to the air; this contains carbon dioxide and water vapour, as well as other substances such as nitrogen, nitrogen oxides, sulphur oxides, and (in the case of coal-fired plants) fly ash, mercury and traces of other metals.
89. (C) Sun is the star nearest to the earth. It is 150 million kilometers away from earth. Sun has temperature of over 15 million °C.
90. (C) A cryogenic rocket engine is a rocket engine that uses a cryogenic fuel or oxidiser, that is, its fuel or oxidizers (or both) are gases liquefied and stored at very low temperatures. Notably, these engines were one of the main factors of the ultimate success in reaching the Moon by the Saturn V rocket. Various cryogenic fuel-oxidizer combinations have been tried, but the combination of liquid hydrogen fuel and the liquid oxygen oxidizer is one of the most widely used.
91. (D) One of the greatest attractions in Africa and one of the most spectacular waterfalls in the world, Victoria Falls is located on the Zambezi River, the fourth largest river in Africa, which is also defining the border between Zambia and Zimbabwe.
92. (C) A fluorescent lamp or fluorescent tube is a gas-discharge lamp that uses electricity to excite mercury vapour. The excited mercury atoms produce shortwave ultraviolet light that then causes a phosphor to fluoresce, producing visible light. 6500 K is usually printed on a used

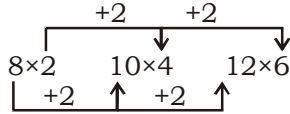
- fluorescent tubelight.
93. (C) Adrenaline is the hormone that prepares the body to deal with anger, fear and danger. Estrogen hormone is released from ovary of female. Insulin controls the level of glucagon in blood. Pheromones attract partners through sense of smell.
94. (D) The tribal population of Andaman and Nicobar belong to Negroid race. A small population of Shompen and Nicobars are Mongoloid descent.
96. (C) The term of the LS can be extended by not more than one year at a time during the proclamation of national emergency under Article 352.
99. (A) The Bollywood actor Manoj Bajpayee has won the "Best Performance by an Actor" at the 10th edition of Asia Pacific Screen Awards (APSA) for his performance as Professor Siras in "Aligarh" directed by Hansal Mehta. The 10th APSA is recognizing and promoting cinematic excellence and cultural diversity of the world's fastest growing film region.
1. (D) River can be controlled by Dam. In the same way Traffic can be controlled by Signal.
2. (A) Coconut is covered by Shell. In the same way letter is covered with an Envelope.
3. (D)  $C D F : G H J :: K L N : O P R$   

4. (A) Both are antonyms.
5. (A)  $A C E : G I K :: M O Q : S U W$   

6. (A)  $2 : 8 :: 4 : 64$   
 $2^3 = 8 \quad 4^3 = 64$
7. (A)  $3 2 1 0 : 5 4 3 2 :: 6 7 5 3 : 8 9 7 5$   

8. (B)  $11 : 38 :: 13 : 44$   
 $11 \times 3 + 5 = 38 \quad 13 \times 3 + 5 = 44$
9. (B) IInd number is 8 times the Ist number except in 'B' option
10. (D) IInd number is 3 times the Ist number except 'D'
11. (B) All are divided by 17 except 154.
12. (D) All others are names of games.
13. (D) All are letters placed at even places but in option 'D' all letters are placed at odd places.
14. (A)  $(A) R S Q N (B) N O M R$   
 $18 \ 19 \ 17 \ 14 \quad 14 \ 15 \ 13 \ 18$   


(C) T U S X (D) E F D I  
 20 21 19 24 5 6 4 9  
 +1 -2 +5 +1 -2 +5

15. (C) As, (7, 27, 55)



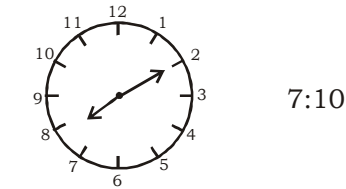
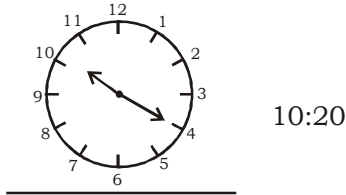
Similarly,



16. (D) D U C K L I K E E L U D E  
 % 3 9 \* 8 \$ \* 5 5 8 3 % 5

17. (\*) Sky

18. (A)



19. (A) Every train after 45 min → next train at 8:30 means train had left at 7:45. It was 15 min ago — then information was broadcast at 8:00 am.

20. (B) Sneha → Avani → Parth  
 ↓  
 Dhruv

21. (C) Shobha ← Sushma ← Rashmi ↔ Arun

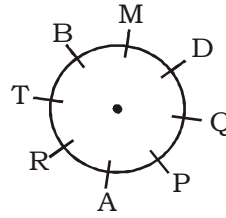
22. (B) 5, 8, 9, 7, 5, 9, 7, 3, 9, 2, 9, 1, 1, 5, 9, 6, 3, 9, 3, 9, 7  
 Odd — 9 — odd

23. (C) Saroj Rajani  
 Left 10th 10th  
 After changing the places:-  
 Rajani Saroj  
 10th 10th (16)  
 Position of Saroj 27th

Now, the position of Rajani = 10 + 16 + 1 = 27th

24. (B) O P N Q R S

25. (A)



26. (D) 2 5 11 20 32  
 +3 +6 +9 +12

27. (C) 98 87 74 59 42  
 -11 -13 -15 -17

28. (D) 436 382 337 301 274  
 -54 -45 -36 -27

29. (B) 4E 8I 13N 19T 26A  
 +4 +5 +6 +7

30. (D) Infancy → Childhood → Adolescence → Youth → Adult

31. (A) 

8	3	4
7	6	1
2	4	1
13	5	4

 (Ist + Iind) - (IIIrd) = IVth  
 (8 + 7) - 2 = 13  
 (3 + 6) - 4 = 5  
 (4 + 1) - 1 = 4

32. (C) In the first column  $\sqrt{1+2+1} = \sqrt{4} = 2$

In the second column  $\sqrt{2+5+2} = \sqrt{9} = 3$

In the third column  $\sqrt{3+12+1} = \sqrt{16} = 4$

in the fourth column

$$\sqrt{2+10+x} = \sqrt{12+x} = 5$$

$$= \sqrt{12+x} = 5$$

$$= 12+x = 25$$

$$x = 13$$

33. (D) 

$1^3-1$	$2^3-1$
0	7
63	26
$4^3-1$	$3^3-1$

34. (A)

35. (D)  $7 \times 6 = 42 \Rightarrow 4 + 2 = 6$  (Middle no.)

$16 \times 9 = 108 \Rightarrow 1 + 0 + 8 = 9$  (Middle no.)

Similarly,

$18 \times 13 = 234 \Rightarrow 2 + 3 + 4 = 9$  (Middle no.)

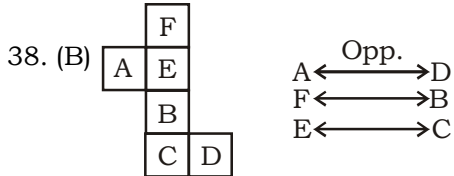
36. (B) Mar April May June July Aug Sep Oct  
code 3 + 2 + 3 + 2 + 3 + 3 + 2 + 3

$$= 21 \quad \frac{21}{7} = 3$$

Remainder = 0 → Then November starts with same day as march.

37. (A) Opposite of 4 is

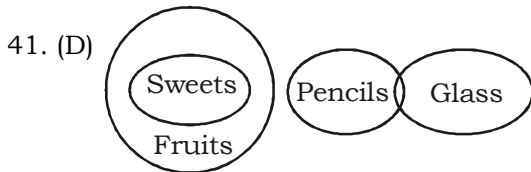
1 2 3 4 5 6  
Ans × × × × × ×



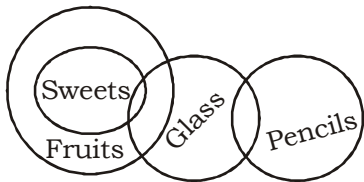
Hence only B possible.

39. (C) Both Mosquito and Ant are Pests.

40. (B)



or,



Either conclusion (I) or (III) follows.

42. (C) Given expression :

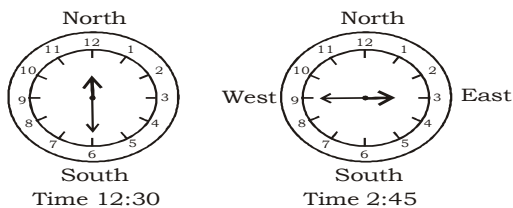
$$18 Q 12 P 4 R 5 S 6 = ?$$

As per question, changing the letters with mathematical operations.

$$\begin{aligned} & 18 \times 12 \div 4 + 5 - 6 \\ & = 18 \times 3 + 5 - 6 \\ & = 54 + 5 - 6 \\ & = 59 - 6 \\ & = 53 \end{aligned}$$

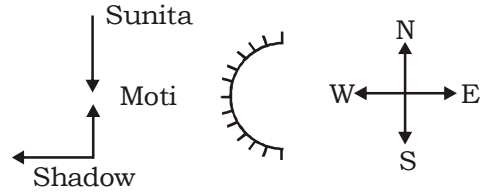
43. (D)  $34 + 12 = 46; \quad 46 \div 2 = 23$   
 $28 + 76 = 104; \quad 104 \div 2 = 52$   
 $97 + 39 = 136; \quad 136 \div 2 = 68$   
Similarly  
 $37 + 73 = 110; \quad 110 \div 2 = 55$

44. (B)



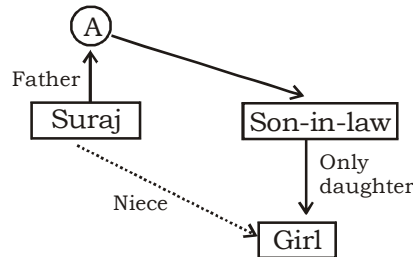
hence Minute hand will be in west direction.

45. (A) Sun is in east at the time of sunrise, so shadow will fall in west direction.



Hence, it is clear that Moti is facing north.

46. (A)



Hence, that girl is niece of Suraj

101. (B)  $E = 2G(1 + m) \quad E = 120 \text{ GPa}$   
 $120 = 2 \times 50(1 + m) \quad G = 50 \text{ GPa.}$   
 $m = 0.2$

102. (B)  $F = ma$  (Acc. to Newton 2nd law)  
 $F - ma = 0 \quad \dots (i)$

Given

Force = P

mass = m

acceleration = a

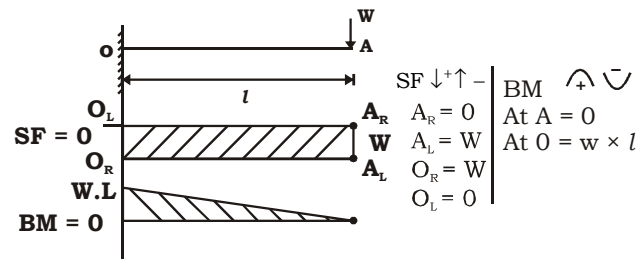
put value in eq. (i)

$$P - ma = 0$$

103. (C) Law of action & reaction.

109. (A) Since the bar is allowed to freely expand, there will be no stresses produced, because stress is internal resistance force on the application of external load.

115. (B)



117. (D) COP = Desired effect

$$= \frac{\text{Heat Rejected}}{\text{Work supplied}} = \frac{(360/60) \text{ KJ/s}}{2 \text{ kw}}$$

$$\text{COP} = 3.0$$

119. (B) Specific heat is the amount of heat required to rise the temperature by unit degree of a unit mass.



122. (B) The heat and work are mutually convertible this statement is called first law of thermodynamics.

124. (A) The universal gas constant of a gas is the product of molecular mass of the gas and the characteristic gas constant.

132. (D) The gas eq. for two containers will be  

$$\frac{P_A V_A}{T_A} = \frac{P_B V_B}{T_B}$$
 as temperature is constant (as there is thermal equilibrium)

$$P_A V_A = P_B V_B$$

135. (A) Supercharging is usually done with the help of a compressor or blower.

136. (C) The heat of sun reaches to us according to radiation.

142. (A) Water soluble cutting fluid is only used for cool the cutting tool and workpiece, cause lubricant cannot completely soluble with water.

143. (B) Formation of surface or form shape directly by applying force by the machine tool.

147. (B) Facing operation in a lathe produce plane surface along to length.

149. (A)  $\eta = 1 - \frac{T_1}{T_2} = 1 - \frac{300}{1200} = 1 - \frac{1}{4} = \frac{3}{4}$   
 $= \frac{3}{4} \times 100 = 75\%$

181. (B) Pressure =  $\rho gh$   
 where h = height of the liquid from the free surface.

182. (C)  $(p - p_o) =$  Gauge pressure  
 p = pressure of the system  
 p<sub>o</sub> = atm pressure

183. (A) Absolute pressure = Atmospheric pressure + gauge pressure

184. (C) Horizontal surface =  $\rho g A \bar{x} = w A \bar{x}$

186. (B) Weight of body = Weight of displaced liquid

$$5 \text{ kg} = \left(\frac{60}{100}\right) V \times 1000 \Rightarrow 5 = 600V$$

$$V = \frac{5}{600} \text{ m}^3$$

$$\text{density of body} = \left(\frac{m}{V}\right) = \frac{5}{\frac{5}{600}} = 600 \text{ kg / m}^3$$

$$\text{Specific gravity} = \frac{\text{Density of body}}{\text{Density of liquid}}$$

$$= \frac{600}{1000} = 0.6$$

188. (C)  $V \propto H^{1/2}$

$$\frac{V_1}{V_2} = \left(\frac{H_1}{H_2}\right)^{1/2}$$

$$\frac{H_1}{H_2} = 25$$

$$V_2 (25)^{1/2} = 5$$

190. (A) Buoyancy is associated weight of the liquid displaced

191. (A) Metacentre coincides with the centre of gravity.

197. (B) 1.4m

$$u = \frac{\pi DN}{60} = K_u \sqrt{2gH}$$

u = Velocity of Runner

K<sub>u</sub> = speed ratio = 0.43

N = 600 rpm

V = 100m/sec

for maximum hydraulic efficiency

$$u = v/2$$

$$50 = \frac{\pi \times D \times 600}{60}$$

$$D = \frac{50 \times 60}{\pi \times 600} = \boxed{1.5m}$$

200. (D) Bernollis equation application are :

(i) Venturimeter

(ii) Oriface meter

(iii) Pilot tube