



**KD**  
**Campus**  
**KD Campus Pvt. Ltd**

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

**Answer-key & Solution**

**SSC JE (Mechanical)**  
**MOCK -(102)**  
**Date 17.6.2017**

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

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

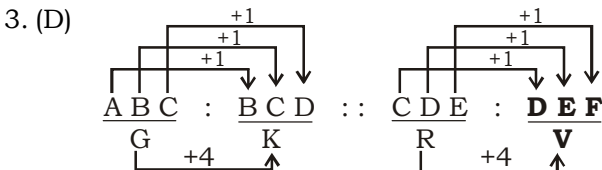
**Note :** *If you face any problem regarding result or marks scored, please contact : 9313111777*

**SOLUTION SSC JE (Mechanical) MOCK TEST no. 102**

1. (B) P U R I  
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$   
 16 + 21 + 18 + 9 = 64  
 $\Rightarrow \frac{64}{4 \text{ letters}} = 16$

Similarly,  
 H O T E L  
 $\downarrow \quad \downarrow \quad \downarrow \quad \downarrow$   
 8 + 15 + 20 + 5 + 12 = 60  
 $\Rightarrow \frac{60}{5 \text{ letters}} = 12$

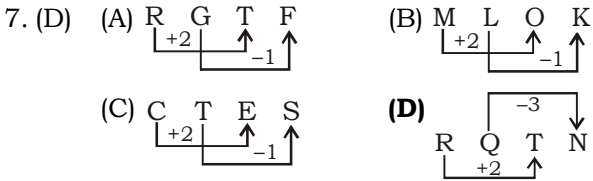
2. (C) First is the classical dance of second.



4. (B) Chair is made of wood. Similarly, **Mesh** is made from wire.

5. (D) In other options, money is deposited whereas in salary money is paid.

6. (D) Long jump is played individually, whereas other games are played between two players.



8. (D) Except  $11\frac{2}{9}$ , others have 100 as a numerator.

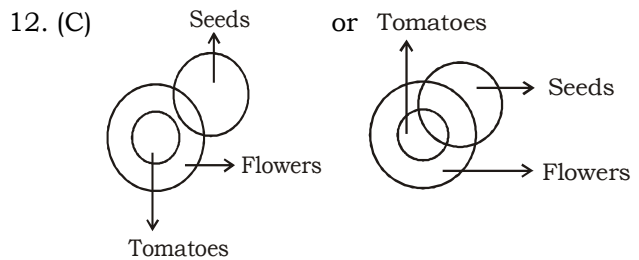
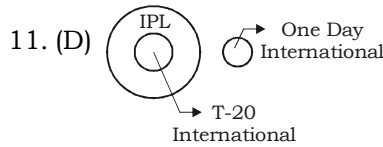
$9\frac{1}{11} = \frac{100}{11}$ ;  $7\frac{9}{13} = \frac{100}{13}$ ;  $5\frac{15}{17} = \frac{100}{17}$   
 But,  $11\frac{2}{9} = \frac{101}{9}$

9. (C) Lend Leopard Lie Life Loan Long  
 1 6 5 4 3 2

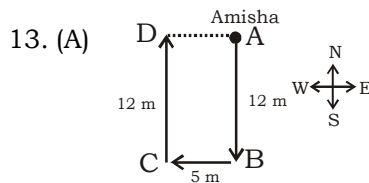
10. (B) Radhe : Mohan = x : 10x  
 Today = x + 10x +  $\frac{10 \text{ yrs}}{5 \text{ yrs of each}}$  = 43 yrs.

ATQ,  
 $11x = 33$  or  $x = 3$  and  $10x = 30$

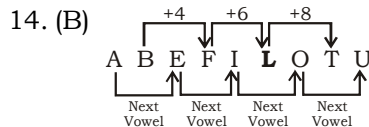
Radhe : Mohan = 3 : 30 (5 yrs ago.)  
 $\downarrow \quad \downarrow$   
 +15    +15  
 18 yrs    45 yrs  
 after 10 yrs from today (Total 15 yrs)  
 $\therefore$  Required difference = 45 - 18 = 27 yrs



1. ✗ 2. ✗  
 Neither Conclusion (1) nor (2) follows.

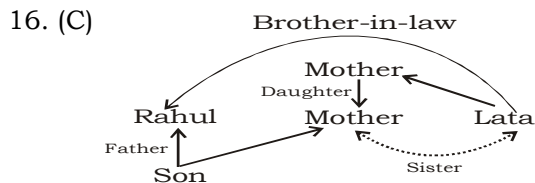


So, Amisha is facing towards the North direction after stopping.



15. (B)

$2 \times 3 = 6$      $3 \times 5 = 15$      $5 \times 7 = 35$      $7 \times 11 = 77$   
 $11 \times 13 = 143$      $13 \times 17 = 221$      $17 \times 19 = 323$      $19 \times 23 = 437$



So, Rahul is Lata's Brother-in-law.

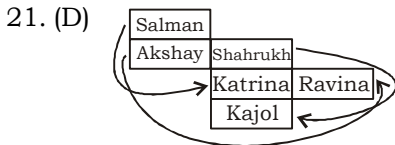
17. (C) ppp **p** / qpp **q** / pp **p** / qp **q** / pp **p**

18. (C)  $\frac{24+18}{3} = 14$ ;  $\frac{74+38}{8} = 14$ ;

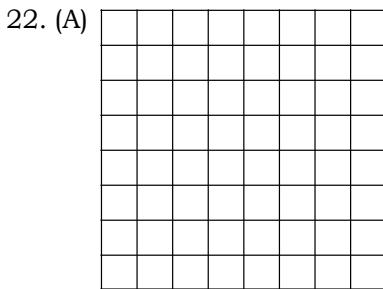
$\frac{64+62}{9} = 14$

19. (B)  $14 \times 4 = 56$      $16 \times 5 = 80$      $29 \times 7 = 203$   
 $2 + 2 = 4$      $3 + 2 = 5$      $1 + 6 = 7$

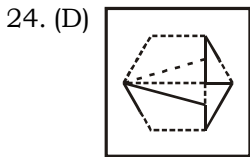
20. (B)  $\sqrt{169} + \sqrt{64} + \sqrt{81} = 13 + 8 + 9 = 30$   
 $\sqrt{625} + \sqrt{324} + \sqrt{49} = 25 + 18 + 7 = 50$   
 $\sqrt{1296} + \sqrt{576} + \sqrt{100} = 36 + 24 + 10 = 70$



So, Salman will appear opposite to Katrina.

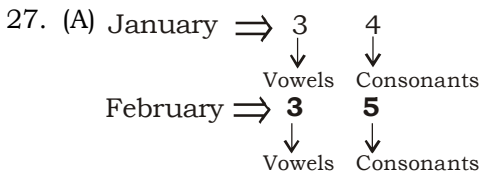


Number of squares in a chess board  
 $= 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 + 8^2$   
 $= 1 + 4 + 9 + 16 + 25 + 36 + 49 + 64 = 204$



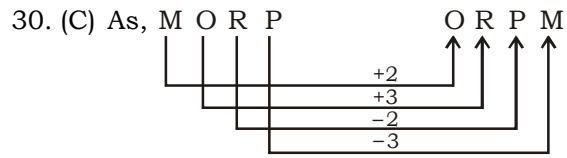
25. (D) 59, 11, 24, 88  
P I N K

26. (B) Tiger is the national animal of India and **Dolphin** is the national animal of Greece.

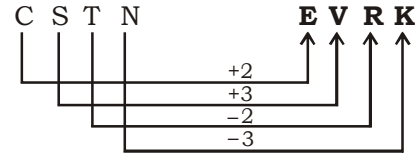


28. (D) Pencil is used for writing and **Brush** is used for Painting

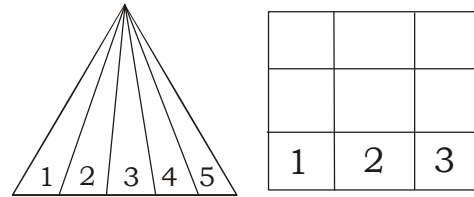
29. (D)  $7 + 2 = 9 \Rightarrow 9^2 = 81$  Reverse  $\rightarrow 18$   
 $3 + 4 = 7 \Rightarrow 7^2 = 49$  Reverse  $\rightarrow 94$



Similarly,



31. (C)



No. of triangles

$= 5 \times \frac{6}{2}$

$= 15$

$\therefore$  Required difference

$= 15 - 14$

$= 1$

No. of squares

$= 1^2 + 2^2 + 3^2$

$= 1 + 4 + 9$

$= 14$

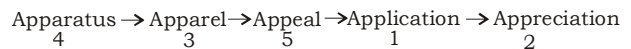
32. (C) Except **169**, others are multiple of 17.

33. (D) Except **Tajmahal**, others are famous temples

34. (A) All except **Aeroplane** runs on road.

35. (D) Except **DALDA**, other words are same in reading from both the ends.

36. (B) The correct order is:-

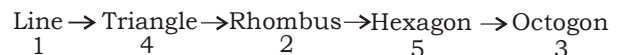


37. (A)

**32 16 8 4 2 1**  
 $1 \ 0 \ 1 \ 1 \ 0 \ 1 = 32 + 8 + 4 + 1 = 45$   
 $1 \ 1 \ 0 \ 0 \ 1 \ 1 = 32 + 16 + 2 = 50$   
 $1 \ 0 \ 1 \ 0 \ 1 \ 1 = 32 + 8 + 2 + 1 = 43$   
 $1 \ 1 \ 0 \ 1 \ 1 \ 1 = 32 + 16 + 4 + 2 + 1 = 55$

38. (C) The word **'INITIATE'** can't be formed.

39. (C) The correct order is



40. (D)  $8 \times 3 - 2 = 22 \Rightarrow 22^2 = 484$   
 $\Rightarrow 484 + (8+2+3) = 492$

$7 \times 9 - 2 = 61 \Rightarrow 61^2 = 3721$   
 $\Rightarrow 3721 + (7+2+9) = 3739$

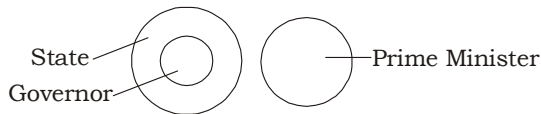
$6 \times 4 - 5 = 19 \Rightarrow 19^2 = 361$   
 $\Rightarrow 361 + (6 + 5 + 4) = 376$

$5 \times 8 - 2 = 38 \Rightarrow 38^2 = 1444$   
 $\Rightarrow 1444 + (5 + 2 + 8) = 1459$

41. (C) 
$$\begin{array}{r} 871 \\ -389 \\ \hline 482 \end{array}$$

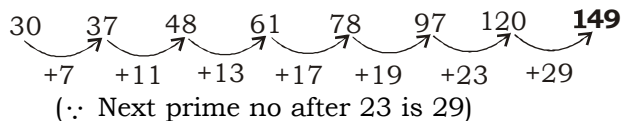
42. (A) Let us calculate the sum diagonally  
 $24 + 18 + 37 + 24 = 100$   
 $14 + 57 + 29 = 100$   
 $67 + 33 = 100$

43. (B)

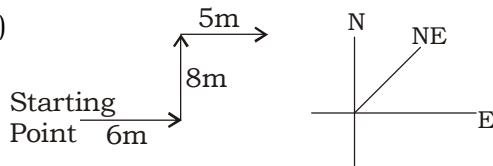


44. (A) We have combined two continuous prime numbers. Next two prime no's are 11 and 13. So, **1113** is the answer.

45. (D)



46. (A)



So, Shalu is in **north-east** direction from the starting point.

51. (D) The words Satyameva Jayate came from Mundaka Upanishad, meaning 'Truth Alone Triumphs'. The Mundaka Upanishad is an ancient Sanskrit Vedic text, embedded inside Atharva Veda. It is a Mukhya (primary) Upanishad, and is listed at number 5 in the Muktika canon of 108 Upanishads of Hinduism. It is among the most widely translated Upanishads.

52. (A) Process of soil erosion:- splash erosion, sheet erosion, rill erosion, and gully erosion.

- In **splash erosion**, the impact of a falling raindrop creates a small crater in the soil, ejecting soil particles.
- If the soil is saturated, or if the rainfall rate is greater than the rate at which water can infiltrate into the soil, surface runoff occurs. **Sheet erosion** is the transport of loosened soil particles by overland flow.
- **Rill erosion** refers to the development of small, ephemeral concentrated flow paths which function as both sediment source and sediment delivery systems for erosion on hillslopes.
- **Gully erosion** occurs when runoff water accumulates and rapidly flows in narrow channels during or immediately after heavy rains or melting snow, removing

- soil to a considerable depth.
53. (B) Directive Principles of State Policy (DPSPs) aim to create social and economic conditions under which the citizens can lead a good life. They also aim to establish social and economic democracy through a welfare state. The Directive Principles of State Policy is guidelines/principles given to the central and state governments of India, to be kept in mind while framing laws and policies.

54. (A) From the economic point of view equilibrium in the marginal utility derived from the goods consumed and money paid. The consumers would be in equilibrium if the satisfaction derived from each commodity is equal to each other.

56. (D) Nichrome is a non-magnetic alloy of nickel, chromium, and iron, usually used as a resistance wire. A common alloy is 80% nickel and 20% chromium, by mass. This alloying provides nichrome properties like hardness and ductility.

58. (B) Hopman cup is a hard-court tennis tournament held every year in Australia. Teams from different countries participate in the tournament. France was the winner for year 2017.

59. (A) The world's first-ever digital ambassador has been created by Denmark that will work on building ties with the global tech giants like Google, Apple, IBM and Microsoft. The new appointment will be a tech liaison and reflect a diplomatic power shift between the established nations and privately-owned unions.

60. (D) Party funding in Austria has been subject to public regulation and public subsidies since 1975. Party finance in Germany is the subject of statutory reports, in which up to 35 parties file annually with the administration of the German Parliament.

61. (A) Amir Khusrau (1253 -1325 CE), a Persian poet was associated with the rulers of Delhi Sultanate. He composed poetry in Arabic and Persian besides being the first writer to use Urdu as a medium of poetic expression.

62. (D) Singapore is located near the Equator. It has a tropical climate, where it is hot and wet throughout the year. Latitude of Singapore is 1° 22" North of the Equator.

64. (D) Per capita real income is nothing but NNP at factor cost. It means national income is sum total of all factor incomes adjusted for increase in prices.

65. (D) When light enters from rarer (air) to denser (glass) medium wavelength and velocity will get affected. The velocity will decrease. Moreover, as the ray bent in passing through different media, it results

- in decrease of wavelength. As such there is no change in frequency when light enters from air to glass.
66. (B) Compressed natural gas (CNG) is made by compressing natural gas which is composed of Methane ( $CH_4$ ), it also contain small amount of ethane.  
Coal gas typically contains Hydrogen, Methane and Carbon Monoxide.  
LPG is the abbreviation or short form of Liquefied Petroleum gas. The major constituent of LPG is Propane and Butane.  
Water gas is a synthesis gas, containing Carbon Monoxide and Hydrogen.
68. (B) Ciris Mittenaere, a dental student from France, has been crowned the new Miss Universe 2016 at the annual pageant at the Mall of Asia Arena in Metro Manila, Philippines on January 30<sup>th</sup>, 2017. She is the 2<sup>nd</sup> Miss Universe from France after Christiane Martel, who was crowned Miss Universe in 1953.
69. (D) Morley-Minto reforms - 1909;  
Simon Commission-1927;  
Chauri-Chaura Incident-1922;  
Dandi March-1930.
70. (B) Nanda Devi peaks are a part of Kumaon Himalayas located in Chamoli district of Uttaranchal. Nanda Devi is the second highest mountain in India, and the highest one located within the country. (Kangchenjunga, which is higher, is on the border of India and Nepal.) It is the 23<sup>rd</sup>-highest peak in the world.
71. (A) The fundamental object of Panchayati Raj system is to ensure people's participation in development, political accountability and democratic decentralization.
72. (B) Participatory Notes (PNs / P-Notes) are instruments used by investors or hedge funds that are not registered with the SEBI (Securities and Exchange Board of India) to invest in Indian securities. Participatory notes are instruments that derive their value from an underlying financial instrument such as an equity share and, hence, the word, 'derivative instruments'. SEBI permitted FIIs to register and participate in the Indian stock market in 1992.
75. (D) Amulya Kumar Patnaik, the 1985 batch IPS officer, has been appointed as the new Commissioner of Delhi Police. He succeeded Alok Kumar Verma, who has been appointed as the new chief of Central Bureau of Investigation (CBI).
76. (B) Dantidurga, a feudatory of Chalukyas, founded the Rastrakuta empire in 753 C E (AD) with their capital at Manyakheta. The word Rashtrakuta is derived from the Sanskrit words 'rashtra' signifying region and 'kuta' meaning the chief.
77. (D) The characteristic of the Tropical Savannah Region is dry and wet season.
80. (A) Scalars are quantities that have magnitude only; they are independent of direction. Vectors have both magnitude and direction. Momentum is the product of the mass and velocity of an object ( $p = mv$ ). Momentum is a vector quantity, since it has a direction as well as a magnitude. The rest of quantities in option pressure, work and energy have magnitude but not direction.
81. (C) Night Vision as referenced here is the technology that provides us with the miracle of vision in total darkness and the improvement of vision in low light environments. Infra-red waves are used in night vision apparatus.
82. (B) Ethanol is produced in India from maize, sugarcane, starch, corn grain etc. Maize is easily available and maize is not costly for production. So economically. Maize is the preferable choice.
83. (C) The National Security Council Secretariat (NSCS) is a body responsible for advising the Prime Minister on key strategic and security issues, both on domestic as well as international fronts. It is in news because of tenfold increase of fund allocation from Rs. 33 crore to Rs. 333 crore for fiscal year 2017-18. The NSCS that works as an advisory group, consists of various experts on security-related matters and is headed by Deputy NSA Arvind Gupta.
84. (A) Lakshya Sen (15) from India has become the World No. 1 Junior Badminton player, as per latest rankings of the Badminton World Federation (BWF). According to BWF current rankings, Lakshya has 16,903 points in eight tournaments that he played in the season. In 2016, he won the Senior India International Series Badminton Tournament along with the All India Senior Ranking Badminton Tournament at Itanagar. He was youngest-ever player and the first-ever from Uttarakhand to win the title at senior level. Earlier, his brother Chirag Sen was ranked number two in the world junior badminton rankings.





# KD Campus Pvt. Ltd

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

85. (B) The largest Committee is the committee of Estimates, given its 30 members

<u>Committee</u>	<u>No. of members</u>
Public Accounts	22
Estimates	30
Public Undertakings	22
Petitions	LS (15), RS (10)

86. (D) Shah Jahan recovered Kandhar in 1638 from the Iranians but lost it again in 1649 despite three campaigns. The loss of Kandhar was a big blow as it was a strategic stronghold.

87. (B) Nallamalai is not a biosphere reserve. It is hill of Eastern Ghats which stretches over Kurnool, Mahabubnagar, Guntur and Kadapa districts of the state of Andhra Pradesh.

90. (D) Air bubble in water would act as a diverging lens, because the index of refraction of air is less than that of water.

91. (D) Fertilizers are those compounds which provide essential primary nutrients (nitrogen, phosphorus and potassium) required for healthy growth of plants and crops. Nitrogenous fertilizer provide nitrogen, phosphatic fertilizer provide phosphorus whereas Potash fertilizer provide potassium to soil. NPK fertilizers are mixed fertilizers. They provide all three essential nutrients (Nitrogen, Phosphorus and Potassium). NPK fertilizers contain nitrogen, phosphorus and potassium in different proportion depending upon the requirement of soil.

92. (A) Panda and bear belong to family Ursidae. Pandas are medium sized bears. Of all the endangered bear species they have the most distinguished colour combination.

93. (B) The Bihar government has recently introduced third gender category in school exams after the Supreme Court recognised transgender people as a third gender in 2014. Now, under the third-gender category the Board exams will be conducted by the Bihar School Examination Board (BSEB). So far, the BSEB did not allow students to take Board exams under the 'third gender' category because the exam form specified two categories, male and female.

94. (B) Rowlatt Satyagraha was the first action of Gandhi on all India level. Satyagraha was to be launched on April 6, 1919. But after the Jallianwala Bagh massacre, Gandhiji was alarmed by the atmosphere of violence and withdrew the Movement on April 18, 1919.

95. (A) Gujarat is the foremost producer of cotton. Gram is produced in Madhya Pradesh, Black pepper is produced in Kerala and Pineapple is produced highest in West Bengal.

96. (A) Panchayati Raj System was first introduced in Nagaur district of Rajasthan on October 2, 1959 followed by Andhra Pradesh.

98. (A) Aufbau principle states that 'in the ground state of the atom, the orbitals are filled in order of their increasing energies, starting with the orbital of lowest energy.' The word aufbau is German word means building up.

**The increasing order of energy and hence that of filling of orbitals is as follows: 1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p, 5s, 4d, 5p, 6s, 4f, 5d, 6p.**

100. (B) The Indian Coast Guard (ICG) has recently celebrated its 40th raising day on February 1, 2017, which is the 4th largest Coast Guard in the world. The ICG came into existence on February 1, 1977 with an enactment of Coast Guard Act 1978, as a full-fledged independent Armed Force of the Union under the Ministry of Defence (MoD). It's primary task is to secure the Indian coasts and to enforce the regulations within the Maritime Zones of India.

102. (D)  $\sigma_{c1} = \frac{pd}{2t} = \frac{pr}{t}$

$$\sigma_{c2} = \frac{p \times \frac{101}{100} r}{\frac{99}{100} t}$$

$$= \frac{101 pr}{99t}$$

% change in hoop stress

$$= \frac{\frac{101 pr}{99 t} - \frac{pr}{t}}{\frac{pr}{t}} \times 100 = \frac{200}{99} = 2.02$$

107. (C)  $\sigma_1 = 100 \text{ MPa}$   
 $\sigma_2 = 400 \text{ MPa}$

$$\tau_{max} = \frac{\sigma_1 - \sigma_2}{2} = \frac{100 - 40}{2}$$

$$\tau_{max} = 30 \text{ MPa}$$

116. (D)  $\epsilon = \cot \phi + \tan(\phi - \alpha)$

If  $\alpha = 0$ ,

then at  $\phi = 45^\circ$

$$\epsilon = 2$$

117. (A) Ribbon like chip is produce due to

- (i) At higher cutting speed
- (ii) Ductile material
- (iii) Small depth of cut
- (iv) By using cutting fluid material

119. (A)Merchant's theory :

$$\phi = \frac{\pi}{4} + \frac{\alpha}{2} - \frac{\beta}{2}$$

120. (C)  $\alpha = 10^\circ$ ,  $\phi = 20^\circ$

from merchant's theory.

$$2\phi + \beta - \alpha = 90^\circ$$

$$\beta = 90 + \alpha - 2\phi$$

$$= 90 + 10^\circ - 2 \times 20$$

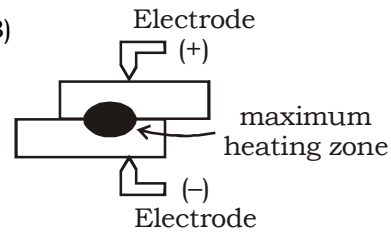
$$\beta = 60^\circ$$

122. (D)For crater wear temperature is the main cause and tool defuse into the chip material and tool temperature is maximum at some distance from the tool tip.

123. (D)Tool life is generally specified by

- (i) Number of pieces machined
- (ii) Volume of metal removed
- (iii) Actual cutting time of failure
- (iv) Cutting speed for a given time
- (v) length of work machined etc.

126. (B)



139. (B)Thickness of laminar boundary layer at a distance  $x$  from the leading edge over a flat plate varies as  $\sqrt{x}$ .

163. (D)  $T_e = \sqrt{T^2 + M^2}$

$$= \sqrt{4^2 + 3^2}$$

$$= \sqrt{25}$$

$$T_e = 5 \text{ KNm}$$