Answer-key & Solution

SSC JE (Electrical)
MOCK - (148)
Date:- 07.10.2018

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

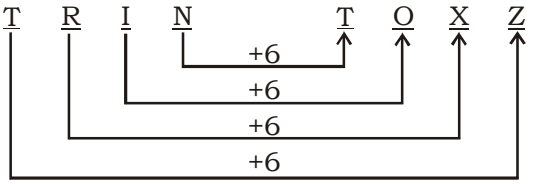
Note : *If your opinion differ regarding any answer, please message the mock test and Question number to 9560620353*

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

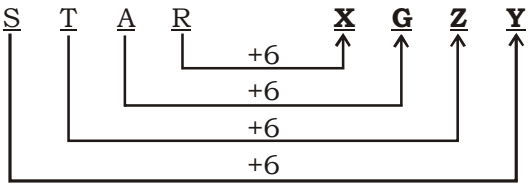
SOLUTION SSC JE (Elecrtrical) MOCK TEST NO. 148

1. (D) As, Visitors are welcomed.
Similarly, Criminals are **prosecuted**.

2. (A) As,



Similarly,



3. (C) As, 8 × 4 = 32
Similarly, 7 × 5 = **35**

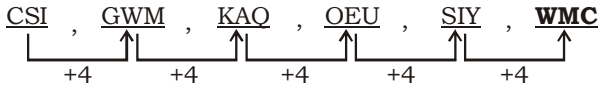
4. (B) Except **Circle**, others are line figures.

5. (C) 3 × (3 – 1) = 6
7 × (7 – 1) = 42
8 × (8 – 1) = **56 ≠ 32**
5 × (5 – 1) = 20

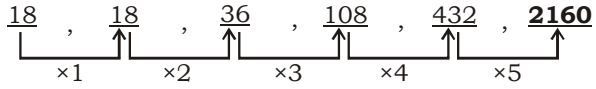
6. (D) Except **LOVM**, sum of the numerical values of other letters is 54.

7. (C) RAPPORT → REPORT → REPRESS → REPRISAL → RESPIRE

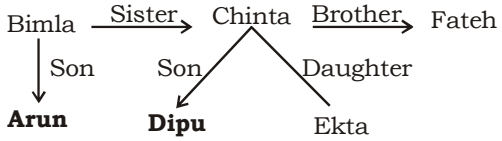
8. (D)



9. (B)

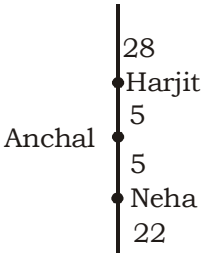


10. (B)



Clearly, there are **2 nephews** of Fateh.

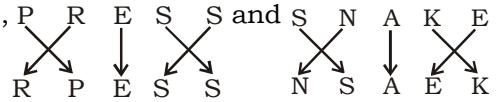
11. (B)



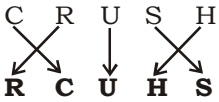
∴ Total No. of girls = **63**

12. (C)

13. (D) As, P R E S S and S N A K E

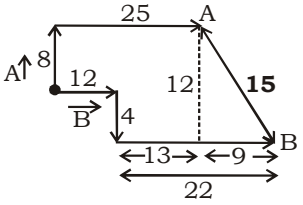


Similarly, C R U S H



14. (A) 28 % 7 @ 20 □ 40 # 128% 16
After changing the signs, as per the given details,
28 ÷ 7 × 20 – 40 + 128 ÷ 16 = **48**

15. (C)



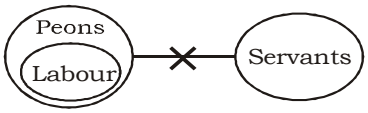
From pythagoras theorem,

AB = $\sqrt{9^2+12^2}$ = **15 miles**

16. (B) $24^2 + 7^2 = 25^2 = 625$
$15^2 + 8^2 = 17^2 = 289$
$40^2 + 9^2 = 41^2$ = **1681**

17. (D) 4 × 2 + 3 × 7 = 29
5 × 6 + 4 × 8 = 62
2 × 7 + 9 × 6 = **68**

18. (B)



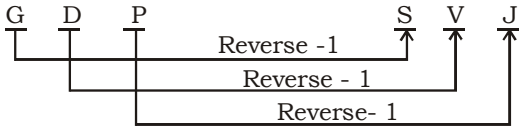
19. (B) **14 Squares**

20. (C) a**b**cd/**a**bcd/abc**d**/abcd

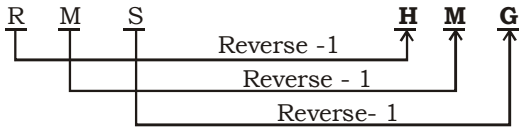
21. (A) Raju's present age = 36 years
12 years ago, Raju's age = 36 – 12 = 24 years
12 years ago, Dipu's age = $24 \times \frac{1}{4} = 6$ years
∴ present age of Dipu = 6 + 12 = 18 years
∴ Age of Dipu after 27 years = 18 + 27 = **45 years**

26. (C) As, Court is the playground of Badminton.
Similarly, **Arena** is the playground of Wrestling.

27. (B) As,



Similarly,



28. (A) As, $32 \times 2 - 2 = 62$
Similarly, $28 \times 2 - 2 =$ **54**

29. (B) Except **'Printer'**, others are input devices.

30. (A) $235 \Rightarrow \mathbf{2 \times 3 \neq 5}$
$166 \Rightarrow 1 \times 6 = 6$
$236 \Rightarrow 2 \times 3 = 6$
$248 \Rightarrow 2 \times 4 = 8$

31. (D) Except "**1729**", others are cubic numbers.

32. (B) Reproach → Reservior → Restaurant → Restraint → Retrace

34. (D) Akhil Kappu Rama Tinku Shalu
2 1
1 4
4 2
2 1
So, weight of Rama is greater than **4** persons.

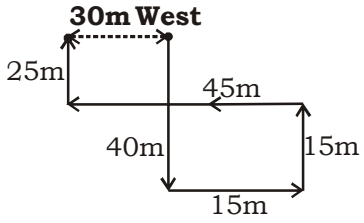
35. (C) **REDEMPTION**

36. (B) IKP , GIN , EGL , **CEJ** , ACH
–2 –2 –2 –2

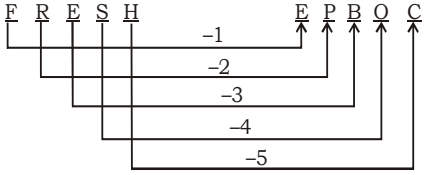
37. (B) 8 , 4 , 4 , 2 , 2 , 1 , **1**
×1/2 ×1 ×1/2 ×1 ×1/2 ×1

38.(C) 87 , 62 , 42 , 27 , 17 , **12**
–25 –20 –15 –10 –5

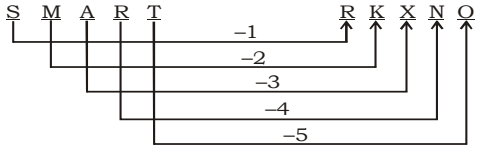
39. (C)



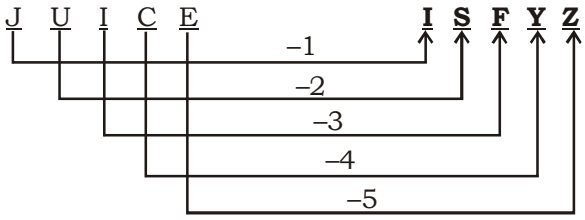
40. (A) As,



and



Similarly,

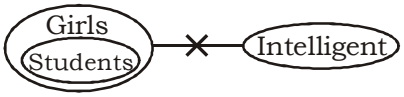


41.(B) $26 \div 5 \times 6 - 28 + 7$
After changing the signs, as per the given details,
$26 \times 5 - 6 + 28 \div 7$
$\Rightarrow 130 - 6 + 4 =$ **128**

42. (C)

43. (A)

44. (C)



I. False II. True
Hence, only conclusion II follows.

45. (B)

46. (B) $42 + 44 + 46 = 132$
$43 + 41 + \mathbf{48} = 132$
$47 + 45 + 40 = 132$

47.(C) $49 - 27 = 22$
$52 - 34 =$ **18**

51. (A) Acids taste sour, conduct electricity when dissolved in water, and react with metals to produce hydrogen gas. Certain indicator compounds, such as litmus, can be used to detect acids. Acids turn blue litmus paper red. The strength of acids is measured on the pH scale.

52. (A) The Garo, the Khasi and the Jaintia hills are part of Shillong Plateau. It is the correct arrangement of the hills from the West to East.

53. (D) Black soil is also called Regur soil. It is black in colour and ideal for growing cotton. This type of soil is typical of the Deccan trap (Basalt) region spread over North-West Deccan plateau and is made up of lava flows.

55. (C) The National Waterway 1 or Ganga-Bhagirathi-Hooghly river system is located in India and runs from Haldia (Sagar) to Allahabad across the Ganges,

Bhagirathi and Hooghly river systems. It is 1,620 km long, making it the longest waterway in India.

57. (A) A single-celled organism, like amoeba, captures and digests food, respires, excretes, grows and reproduces. Similar functions in multicellular organisms are carried out by groups of specialized cells forming different tissues. Tissues, in turn, form organs.

58. (B) Vascular tissue is a series of complex cell types that comprise the plant's vascular system (the xylem and phloem), which moves nutrients and water throughout vascular plants.

59. (A) Ferrous Sulphate is the chemical compound with the formula $FeSO_4$. Green vitriol is an important compound of iron. It's used medically to treat iron deficiency, and also for industrial applications.

60. (B) Carbon dioxide passed into limewater gives a milky solution, due to precipitation of an insoluble suspension of Calcium Carbonate:

$Ca(OH)_2(aq) + CO_2(g) \longrightarrow CaCO_3(s) + H_2O(l)$

61. (B) Forest is known as dynamic living entity because forest is independent living force that stimulates change or progress within an ecosystem. By harbouring greater variety of plants, the forests provide greater opportunities for food and habitat for herbivore. In forest wide variety of animals helps the forest to regenerate and grow. Decomposer helps in maintaining the supply of nutrient to growing plant in forest. Thus forest is full of life and vitality.

62. (A) The Biaras Small Hydro Power Plant Project (SHP) of 1.5 MW capacity, in Biaras Drass, Kargil Jammu & Kashmir, was commissioned on 4th November 2017. The total cost of the project, fully funded by the Ministry of New & Renewable Energy, is Rs. 17 crores and this was the first project to be commissioned under the Prime Minister's Ladakh Renewable Energy Initiative (LREI).

64. (B) The characteristics of the unorganized sector of economy:

- There are rules and regulations but these are not followed. Jobs are low-paid and often not regular.
- There is no provision for overtime, paid leave, holidays, leave due to sickness etc.
- Employment is not secure. People can be asked to leave without any reason.
- When there is less work, such as during some seasons, some people may be asked to leave.
- A lot also depends on the whims of the employ

65. (B) In India, a motion of No Confidence can be introduced only in the Lok Sabha (the lower house of the Parliament of India). Most importantly, the Lok Sabha controls the Council of Ministers. Only a person who enjoys the support of the majority of the members in the Lok Sabha is appointed the Prime Minister. If the majority of the Lok Sabha members say they have 'no confidence' in the Council of Ministers, all ministers including the Prime Minister, have to quit. The Rajya Sabha does not have this power.

67. (D) The Mansabdari system was the administrative system of the Mughal Empire introduced by Akbar. The word mansab is of Arabic origin meaning rank or position. The system, hence, determined the rank of a government official.

68. (A) Vitamin C deficiency is called scurvy and can cause bleeding gums. If a person is suffering from bleeding gums he or she needs food which is rich in Vitamin C. It's because bleeding gums is caused by deficiency of Vitamin C in human body.

71. (C) A food web is a system of connected and interdependent food chains. All organisms originally got their energy from the sun. A food producer is an organism that is a source of food for other organisms in a food chain.

72. (C) PMUY was launched by Prime Minister Narendra Modi in May 2016 with tagline of Swachh Indhan, Behtar Jeevan.

73. (D) L.K. Advani wrote the book "A prisoner's Scrapbook". Lal Kishen Chand Advani known as Lal Krishna Advani is an Indian politician. A former president of the Bharatiya Janata Party, he served as the Deputy Prime Minister of India from 2002 to 2004.

75. (C) In, 1991, the Government set up the Tax Reforms Committee under the Chairmanship of Raja J. Chelliah examined the tax structure of the country and suggested appropriate changes therein. In its report submitted to the Government in January 1993, it had made several recommendations for reforming India's tax structure.

76. (A) Banks and cooperative societies constitute the formal sector of credit. Landlords, moneylenders, traders, relatives, friends and other sources of credit constitute the informal sector of credit. The formal sector provides only marginally more credit than the informal sector currently. The credit activities of the formal sector are supervised by the Reserve Bank of India. The RBI gives credit to all at low interest rates.

77. (C) Bahadur Shah Zafar was the last Mughal emperor. He was the second son of and became the successor to his father, Akbar II, upon his death on 28th September 1837. Bahadur Shah Zafardied in 1862 in Rangoon where he was exiled after 1857 debacle.

78. (B) Earth spins around its axis, just as a top spins around its spindle. This spinning movement is called rotation period. Earth rotates once in about 24 hours with respect to the Sun, but once every 23 hours, 56 minutes, and 4 seconds with respect to the stars.

79. (B) The open circulatory system is common to mollusks and arthropods. Open circulatory systems (evolved in crustaceans, insects, mollusks, cockroach and other invertebrates) pump blood into a hemocoel with the blood diffusing back to the circulatory system between cells. Blood is pumped by a heart into the body cavities, where tissues are surrounded by the blood.

80. (A) Sonar uses the echo principle by sending out sound waves underwater or through the human body to locate objects. Sonar is also used to measure the depth of water, by means of a device called Fathometer.

81. (C) Debugging is the process of detecting and removing of existing and potential errors (also called as 'bugs') in a software code that can cause it to behave unexpectedly or crash.

82. (B) South Indian temple architecture, also called Dravida Style, architecture invariably employed for Hindu temples in modern Tamil Nadu from the 7th to the 18th century, characterized by its pyramidal, or kutina-type, tower.

85. (B) Gautama Buddha died in 483 BC aged 80 years in the city of Kusinara (present day Kushinagar).

87. (D) The Indian Ocean is the third largest of the world's oceanic divisions, covering 70,560,000 km². The Indian Ocean does not have any shape.

88. (B) Vittiya Saksharta Abhiyan aims at making people aware about the cashless economic system. This Scheme was launched as on 1st December 2016 by Human Resource Development Minister in New Delhi.

89. (A) The Indian Grand Prix was a Formula One race in the calendar of the FIA Formula One World Championship, which was held at the Buddh International Circuit in GautamBuddh Nagar district of Uttar Pradesh State. The first edition took place on 30th October 2011, as the 17th race of the 2011 Formula one season. The inaugural race was won by Germany's Sebastian Vettel.

91. (D) The Fundamental Rights of Indian Citizen were included in the Constitution of India right from the drafting of the constitution. Fundamental duties were added by 42nd and 86th Constitutional Amendment acts. As of now there are 11 Fundamental duties. The Duties are as follows:-

1. To abide by the constitution and respect its ideal and institutions
2. To cherish and follow the noble ideals which inspired our national struggle for freedom
3. To uphold and protect the sovereignty, unity and integrity of India
4. To defend the country and render national service when called upon to do so
5. To promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional diversities, to renounce practices derogatory to the dignity of women.

6. To value and preserve the rich heritage of our composite culture
7. To protect and improve the natural environment including forests, lakes, rivers, and wild-life and to have compassion for living creatures
8. To develop the scientific temper, humanism and the spirit of inquiry and reform
9. To safeguard public property and to abjure violence
10. To strive towards excellence in all spheres of individual and collective activity, so that the nation constantly rises to higher levels of endeavour and achievement. Further, one more Fundamental duty has been added to the Indian Constitution by 86th Amendment of the constitution in 2002.
11. Who is a parent or guardian, to provide opportunities for education to his child or as the case may be, ward between the age of six and fourteen years.

92. (D) Levothyroxine sodium is a drug approved by the FDA as an oral and injectable prescription thyroid hormone medication that is used to treat underactive thyroid (hypothyroidism) and other conditions.

94. (B) Iron is a chemical element with an atomic number 26. A symbol 'Fe' represents it. It is the most common element that is found on the earth. Similarly, atomic number of Cobalt is 27.

95. (C) CFCs have been responsible for depleting the ozone layer as they attack and destroy ozone molecules. The ozone layer is a high level layer of gas in the stratosphere.

97. (B) The SI unit of magnetic flux is the weber (Wb), and the CGS unit is the Maxwell.

98. (A) Saudi Arabia has become the first country to give a robot citizenship. The robot, named Sophia, was confirmed as a Saudi citizen during a business event in Riyadh. In November 2017, Sophia was named the United Nations Development Programme's first ever Innovation Champion, and the first non-human to be given any United Nations title.

99. (A) u = –40
v = 10cm
By lens formula :

$$-\frac{1}{u}+\frac{1}{v}=\frac{1}{F}$$

$$\frac{1}{40}+\frac{1}{10}=\frac{1}{F} \Rightarrow \frac{1}{F}=\frac{4+1}{40}=\frac{5}{40}=\frac{1}{8}$$

So P (power) = $\frac{100}{F}$ (in cm)

$$= \frac{100}{8} = +12.5\ D$$

P = + 12.5D

100. (D) Nathu La is a mountain pass in the Himalayas in East Sikkim district. It connects the Indian state of Sikkim with China's Tibet Autonomous Region. This used to be the silk trade route between India and Tibet. Lines of mules used to carry silk, gold and many other items from Tibet to India and take daily essentials back to Tibet. Some important Passes in India:

Zoji La (Pass)-It is in the Zaskar range of Jammu & Kashmir. The road route from Srinagar to Leh goes through this pass. It has been created by the Indus River.

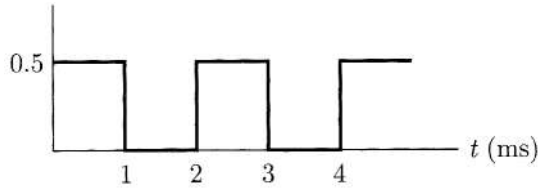
- Banihal Pass-It is in Jammu & Kashmir. The National Highway 1A that links Srinagar to Jammu goes through it. It has been created by the Indus River.
- Shipki La (Pass)-It is in Himachal Pradesh. The road from Shimla to Tibet goes through this pass. The Satluj River flows through this pass.
- Bara-Lacha Pass-It is also in Himachal Pradesh. It links Mandi and Leh by road.
- Rohtang Pass-It is also in Himachal Pradesh. It cuts through the Pir Panjal range. It links Manali and Leh by road.

101. (D) Since $i=\frac{5}{10k}=0.5\,\text{mA}$,

i (t) will be a square wave

So average value is $\frac{0.5}{2}$ = 0.25 mA

i(t) (mA)



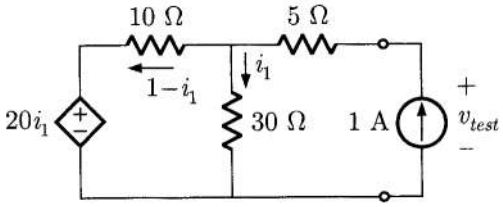
102.(B) $V_1 - V_2 = 5I_a + 8$
$V_1 = 6I_a + 8 + V_2$

103.(D) $i_2 = \frac{v_2}{50} = 0.2v_2$

$10 = -v_2 + 100(-0.02v_2 + 0.04v_2)$

$10 = -v_2 + 2v_2 \Rightarrow v_2 = 10$ V

104. (C) The circuit is as shown below



$i_N = 0$,

$20i_1 = 30i_1 - 10(1 - i_1) \Rightarrow i_1 = 0.5$A

$v_{test} = 5 \times 1 + 30 \times 0.5 = 20$ V

$$R_N = \frac{v_{test}}{1} = 20\Omega$$

105. (A) $$Q = \frac{\omega_0}{B} = \frac{\sqrt{f_1 f_2}}{f_2 - f_1} = 87.97/4 \approx 22$$

106.(D) $$N \propto \frac{E_b}{\varphi} \quad \text{.....(i)}$$

but, we know that, the power developed by the machine will be maximum when

$$E_b = \frac{V_t}{2}$$

So, for a maximum power development speed of motor will be half from equation (i)

107. (A) At the instant of starting

$E_a = V_t - I_a R_a - V_{brush} = 0$

or $$I_a = \frac{V_a - V_{brush}}{R_a} = \frac{120 - 2}{0.2} = 590A$$

108. (C) The field current: $I_{sh} = 400/200 = 2$A

The armature current $I_a = 30 - 2 = 28$ A

The back emf of the motor

$E_a = 400 - 28 \times 1 = 372$ V

The total voltage in the armature circuit at the time of plugging is

$V_{a(total)} = 400 + 372 = 772$ V

112. (A) Line length is 100 km so it is considered as a short transmission line.

Loss of the line

Total $P_{loss} = 3I_P^2 R$

$$P = \sqrt{3} V_L I_L$$

$$I_L = \left(\frac{150M}{\sqrt{3} \times 110K}\right)$$

$$15M = \left(\frac{150M}{\sqrt{3} \times 110K}\right)^2 \times R$$

$$R = \frac{110 \times 110 \times 3}{1500}$$

$= 24.2/3$

$= 8.06\ \Omega$/phase

121.(B) in SCIM

Condition for producing pull-out torque

R = X

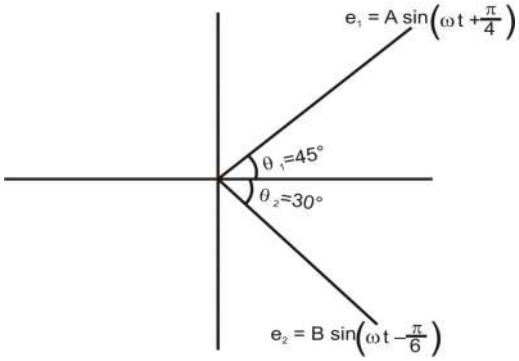
So, power factor of rotor is equals to

$$\cos\phi = \cos\left(\tan^{-1}\left(\frac{R}{x}\right)\right)$$

$= \cos 45°$

$= 0.707$

122.(A)



So Total phase difference between the two quantities is

$\theta = \theta_1 + \theta_2$

$= 45 + 30 = 75°$

128. (C)

$$\because \quad N_1 = \frac{120 f_1}{P_1}$$

$$\because \quad f_1 = 50 \text{ Hz}, \quad P_1 = 4, \quad f_2 = \frac{f_1}{2}$$

$$P_2 = \frac{P_1}{2}$$

$$N_2 = \frac{120 f_2}{P_2} = \frac{120.f_1}{2.P_1/2}$$

$$= \frac{120 f_1}{P_1} = \frac{120 \times 50}{4} = 1500 \text{ rpm}$$

129. (A) $\because$ At maximum efficiency Iron loss = copper loss = 1000 W

$\because$ It occurs at full load, So, full load Copper loss $= I_{fl}^2.R = 1000$ watt

At half load,

$$\text{Copper loss} = \left(\frac{I_{fl}^2}{2}\right)^2 \times R = \frac{1}{4} I_{fl}^2 \times R$$

$$= \frac{1000}{4} = 250 \text{ watt}$$

133.(D) $T \propto \phi I_a$

$T \propto I_a$

$$\frac{T_1}{T_2} = \frac{I_{a1}}{I_{a2}}$$

$$T_2 = \frac{T_1 I_{a2}}{I_a}$$

$$= \frac{60 \times 20}{10}$$

$T_2 = 120 Nm$

134.(C) $E_g \propto \phi$

$\phi \propto I_f$

$V_{rated} = 180 \times \frac{4}{2} = 360\ V$

this represents the maximum voltage as determined from a linear air gap line. However, as the field current is increased, saturation of the iron will result proportionally less flux cutting the stator windings. This will result in a lawer voltage than given by the air gap line. The generated voltage would be something less than 360 V depending on the degree of saturation.

141.(A) Reduction in induced voltage

$$= \text{voltage drop per brush} \times \frac{\text{number of brushes}}{\text{number of parallel path}}$$

$$= 1 \times \frac{16}{8} = 2\ volt$$

143. (D) $4 = 124\left(\frac{50k}{50k+X}\right)$

$\Rightarrow$ X = 15 k Ω = 1.5 M Ω

145. (C) $E_b = \frac{NP\phi Z}{60A}$

$E_b \propto K\ \phi N$

$E_b = V_t - I_a(R_a + R_{se})$

$= 400 - 20(0.08 + 0.06)$

$E_{b1} = 397.2\ V$

$E_{b2} = 400 - 50(0.14)$

$= 400 - 7 = 393V$

$$\frac{E_{b1}}{E_{b2}} = \frac{\phi_1 N_1}{\phi_2 N_2}$$

$$\frac{397.2}{393} = \frac{\phi_1 \times 1100}{(1.3)\phi_1 \times N_2}$$

$N_2 = 837.2$

158.(D) The voltage across the capacitor is give as

$$V_C(t) = V\left(1 - e^{\frac{t}{RC}}\right)$$

$$\frac{d}{dt} V_C(t) = V\left(\frac{1}{RC} e^{-\frac{t}{RC}}\right)$$

$$\frac{d}{dt} V_C(t)_{\text{at t=0}} = \frac{V}{RC} e^0 = \frac{V}{RC}$$

165. (C) By using potentiometer

$V_{actual} = I \times R$

$\Rightarrow$ $1.2 = I \times R$ ...(1)

$V_m = I(R \,||\, 60K)$

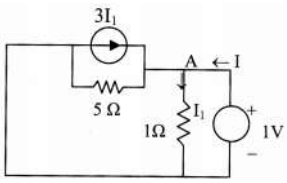
$\Rightarrow$ $0.9 = I \times \frac{R \times 60K}{60K + R}$ ...(2)

From equation (1) ÷ (2)

$$\frac{1.2}{0.9} = \frac{IR \times (60K + R)}{IR \times 60K}$$

$\Rightarrow$ R = 20 kΩ

168.(B) To get the Z_{eq} for a circuit apply one volt at the place of load and short circuit the voltage source of and open circuit the current source.



$I = I_1 + V_A - 3I_1$

But $VA = IVC$

$I = I_1 + (1/5) - 3I_1 \Rightarrow I = (1/5) - 2I_1$

And $I_1 \frac{V_A}{1\Omega} = \frac{1}{1} = 1 \Rightarrow I = (1/5) - 2$

$$I = \frac{1-10}{5} = \frac{-9}{5}$$

Hence $R = \frac{V}{1} = \frac{-5}{9} \cong (5/9)$

169.(A) The resistance R entering the time constant expression T [L/R] is the resistance as seen by the inductor L. Therefore

$$R = R_3 + \frac{R_1 R_2}{R_1 + R_2}$$

$\therefore$ Time constant, $T = \dfrac{L}{R_3 + \dfrac{R_1 R_2}{R_1 R_2}}$

173.(C) As motor; the induced voltage E_b
= 220 – 20 × 1 = 200 V
As generator: the induced voltage E_g
= 220 + 20 × 1 = 240 V
$\therefore$ The difference is 40 V

181.(D) $E = \frac{1}{2} L I^2$

$$= \frac{1}{2} \times 1 \times 4 = 2 \; Joules$$

182.(D) $V_s = \sqrt{V_R^2 + V_C^2}$

$$= \sqrt{(12)^2 + (5)^2} = 13 \; V$$

183.(B) rms = $\sqrt{\frac{1}{T}\int_0^{T/2} \left(\frac{2}{T} t \times f(t)\right)^2 dt}$

$$\sqrt{\frac{1}{T}\left(\frac{4}{T^2} \times \frac{t^3}{3}\right)_0^{T/2}}$$

$$\sqrt{\frac{4}{3T^3}\left(\frac{T^3}{8} - 0\right)}$$

$$\sqrt{\frac{4}{3} \times \frac{1}{8}} = \sqrt{\frac{1}{6}}$$

184.(C) $P = I^2 R$

$$= \left(\frac{230}{10}\right)^2 \times 8$$

= 4232 W

191.(A) ripple factor = $\dfrac{\text{ripple voltage}}{\text{dc voltage}}$

$$= \frac{150 \times 10^{-3}}{15} = 0.01$$