SSC JE 2014 General Engineering Electrical

JN

DO NOT OPEN THE SEAL OF THE BOOKLET UNTIL YOU ARE TOLD TO DO SO

DB 2014
PAPER I
प्रश्न-पत्र I

Test Form No.
टेस्ट फॉर्म सं.
542 PK 6

1405255

Time Allowed : 2 Hours
निर्धारित समय : 2 घंटे

Maximum Marks : 200
अधिकतम अंक : 200

Read the following instructions carefully before you begin to answer the questions. This Booklet contains questions in English as well as in Hindi.
प्रश्नों के उत्तर देने से पहले नीचे लिखे अनुदेशों को ध्यान से पढ़ लें । इस पुस्तिका में प्रश्न अंग्रेज़ी तथा हिन्दी दोनों में दिये गये हैं ।

INSTRUCTIONS TO CANDIDATES

1. This Booklet contains **200** questions in all comprising the following three tests :
   - Test (i) : General Intelligence and Reasoning (50 Questions)
   - Test (ii) : General Awareness (50 Questions)
   - Test (iii) : Part A : General Engineering (Civil and Structural) (100 Questions)
     OR
     Part B : General Engineering (Electrical) (100 Questions)
     OR
     Part C : General Engineering (Mechanical) (100 Questions)
2. In questions set bilingually in English and Hindi, in case of discrepancy, the English version will prevail.
3. Test (i) General Intelligence and Reasoning and Test (ii) General Awareness are compulsory for all the candidates. Candidates are required to attempt only one Section in Test (iii) General Engineering i.e. Part A Civil and Structural OR Part B Electrical OR Part C Mechanical as per option in the application form given by the candidates failing which you will be awarded ***'ZERO'*** mark.
4. All questions are compulsory and carry equal marks.
5. *The paper carries negative marking, 0·25 marks will be deducted for each wrong answer.*
6. **Before you start to answer the questions you must check up this Booklet and ensure that it contains all the pages (1-80) and see that no page is missing or repeated. If you find any defect in this Booklet, you must get it replaced *immediately*.**
7. You will be supplied the Answer-Sheet separately by the Invigilator. Before you actually start answering the questions, you must complete and code the details of ***Name, Roll Number, Ticket Number, Name of the examination as mentioned in the admission certificate, Date of birth, Test Form Number and Stream*** i.e. Civil and Structural OR Electrical OR Mechanical etc., on Side-I of the Answer-Sheet carefully. You must also put your signatures and left hand thumb impression on the Answer-Sheet at the prescribed place before you start answering the questions. These instructions must be fully complied with, failing which, your Answer-Sheet will not be evaluated and you will be awarded ***'ZERO'*** mark.
8. Answers must be shown by completely blackening the corresponding ovals on Side-II of the Answer-Sheet against the relevant question number by Black/Blue Ball-point Pen only. Answers which are not shown by Black/Blue Ball-point Pen will not be awarded any mark.
9. A machine will read the coded information in the OMR Answer-Sheet. In case the information is incomplete or different from the information given in the application form, such candidate will be awarded 'ZERO' mark.
10. The Answer-Sheet must be handed over to the Invigilator before you leave the Examination Hall.
11. **Failure to comply with any of the above instructions will render a candidate liable to such action/penalty as may be deemed fit.**
12. The manner in which the different questions are to be answered has been explained at the back of this Booklet (Page No. 80), which you should read carefully before actually answering the questions.
13. Answer the questions as quickly and as carefully as you can. Some questions may be difficult and others easy. Do not spend too much time on any question.
14. **No rough work is to be done on the Answer-Sheet. Space for rough work has been provided below the questions.**
15. **"Mobile phones and wireless communication devices are completely banned in the examination halls/rooms. Candidates are advised not to keep mobile phones/any other wireless communication devices with them even switching it off, in their own interest. Failing to comply with this provision will be considered as using unfair means in the examination and action will be taken against them including cancellation of their candidature."**

उम्मीदवारों के लिए अनुदेश

1. इस पुस्तिका में कुल **200** प्रश्न हैं, जिनमें निम्नलिखित तीन परीक्षण शामिल हैं :
   - परीक्षण (i) : सामान्य बुद्धि और तर्क (50 प्रश्न)
   - परीक्षण (ii) : सामान्य जानकारी (50 प्रश्न)
   - परीक्षण (iii) : भाग क : सामान्य इंजीनियरी (सिविल एवं संरचनात्मक) (100 प्रश्न)
     अथवा
     भाग ख : सामान्य इंजीनियरी (विद्युत) (100 प्रश्न)
     अथवा
     भाग ग : सामान्य इंजीनियरी (यांत्रिक) (100 प्रश्न)
2. अंग्रेज़ी और हिन्दी भाषा में तैयार किए गए द्विभाषी प्रश्नों में कोई विसंगति होने की स्थिति में अंग्रेज़ी विवरण मान्य होगा ।
3. परीक्षण (i) सामान्य बुद्धि और तर्क एवं परीक्षण (ii) सामान्य जानकारी सभी उम्मीदवारों के लिए अनिवार्य है । उम्मीदवारों को आवेदन-पत्र में दिए विकल्प के अनुसार परीक्षण (iii) सामान्य इंजीनियरी का केवल एक ही भाग क सिविल एवं संरचनात्मक अथवा भाग ख विद्युत अथवा भाग ग, यांत्रिक को हल करना होगा अन्यथा आपको ***'शून्य'*** अंक दिया जाएगा ।
4. सभी प्रश्न अनिवार्य हैं तथा सबके बराबर अंक हैं ।
5. *प्रश्न पत्र में नकारात्मक अंकन होगा । हर ग़लत उत्तर के लिए 0·25 अंक काटा जाएगा ।*
6. **प्रश्नों के उत्तर देने से पहले आप इस पुस्तिका की जाँच करके देख लें कि इसमें पूरे पृष्ठ (1-80) हैं तथा कोई पृष्ठ कम या दुबारा तो नहीं आ गया है । यदि आप इस पुस्तिका में कोई त्रुटि पाएँ, तो *तत्काल* इसके बदले दूसरी पुस्तिका ले लें ।**
7. निरीक्षक द्वारा आपको उत्तर-पत्रिका अलग से दी जाएगी । प्रश्नों के उत्तर वास्तव में शुरू करने से पहले आप उत्तर-पत्रिका के Side-I में नियमावली के अनुसार अपना ***नाम, रोल नम्बर, टिकट नम्बर, परीक्षा का नाम जैसे प्रवेश पत्र में दिखाया गया है, जन्म तिथि, टेस्ट फॉर्म संख्या तथा विषय*** अर्थात् सिविल एवं संरचनात्मक या विद्युत या यांत्रिक आदि अवश्य लिखें । प्रश्नों के उत्तर देने से पहले उत्तर-पत्रिका पर निर्धारित स्थान में आप अपने हस्ताक्षर एवं बाएँ हाथ के अंगूठे का निशान भी अवश्य लगाएँ । उपर्युक्त अनुदेशों का पूरी तरह अनुपालन किया जाए, अन्यथा आपकी उत्तर-पत्रिका को जाँचा नहीं जाएगा और ***'शून्य'*** अंक दिया जाएगा ।
8. उत्तर-पत्रिका में सभी उत्तर Side-II में प्रश्न संख्या के सामने दिये गये सम्बन्धित अण्डाकार खानों को केवल काला/नीला बॉल-पॉइंट पेन से पूरी तरह काला करके दिखाएँ । जो अण्डाकार खाने काला/नीला बॉल-पॉइंट पेन से नहीं भरे जाएँगे, उनके लिए कोई अंक नहीं दिया जाएगा ।
9. ओ.एम.आर. उत्तर-पत्रिका में भरी गई कूट सूचना को एक मशीन पढ़ेगी । यदि सूचना अपूर्ण है अथवा आवेदन प्रपत्र में दी गई सूचना से भिन्न है, तो ऐसे अभ्यर्थी को 'शून्य' अंक दिया जाएगा ।
10. परीक्षा-भवन छोड़ने से पहले परीक्षार्थी को उत्तर-पत्रिका-निरीक्षक के हवाले कर देनी चाहिए ।
11. **ऊपर के अनुदेशों में से किसी एक का भी पालन न करने पर उम्मीदवार पर विवेकानुसार कार्यवाही की जा सकती है या दण्ड दिया जा सकता है ।**
12. विभिन्न प्रश्नों के उत्तर देने की विधि इस पुस्तिका के पीछे (पृष्ठ संख्या 80) में छपे हुए निर्देशों में दे दी गई है, इसे आप प्रश्नों के उत्तर देने से पहले ध्यानपूर्वक पढ़ लें ।
13. प्रश्नों के उत्तर जितनी जल्दी हो सके तथा ध्यानपूर्वक दें । कुछ प्रश्न आसान तथा कुछ कठिन हैं । किसी एक प्रश्न पर बहुत अधिक समय न लगाएँ ।
14. **कोई रफ़ कार्य उत्तर-पत्रिका पर नहीं करना है । रफ़ कार्य के लिए स्थान प्रश्नों के नीचे दिया गया है ।**
15. **"परीक्षा हालों/कमरों में मोबाइल फोन तथा बेतार संचार साधन पूरी तरह निषिद्ध हैं । उम्मीदवारों को उनके अपने हित में सलाह दी जाती है कि मोबाइल फोन/किसी अन्य बेतार संचार साधन को स्विच ऑफ करके भी अपने पास न रखें । इस प्रावधान का अनुपालन न करने को परीक्षा में अनुचित उपायों का प्रयोग माना जाएगा और उनके विरुद्ध कार्रवाई की जाएगी, उनकी अभ्यर्थिता रद्द कर देने सहित ।"**

SEAL

इस पुस्तिका की सील तब तक न खोलें जब तक कहा न जाए

TEST (iii)

PART B : GENERAL ENGINEERING

(ELECTRICAL)

101. The B-H curve for _____ will be a straight line passing through the origin.

(A) air

(B) soft iron

(C) hardened steel

(D) silicon steel

102. Magnetic lines of force coming from a magnet

(A) intersect at infinity

(B) intersect within the magnet

(C) cannot intersect at all

(D) cancel at pole faces

103. The main advantage of temporary magnets is that we can

(A) change the magnetic flux

(B) use any magnetic material

(C) decrease the hysteresis loss

(D) magnetize without any source

104. The magnetic material used in permanent magnets is

(A) iron

(B) soft steel

(C) nickel

(D) hardened steel

105. Energy stored in an inductor is given by

(A) $\frac{1}{\sqrt{2}}(LI)^2$ (B) $\frac{1}{2}L^2I$

(C) $\frac{1}{\sqrt{LI}}$ (D) $\frac{1}{2}LI^2$

106. A coil with a certain number of turns has a specified time constant. If the number of turns is doubled, its time constant would

(A) remain unaffected

(B) become double

(C) become four-fold

(D) get halved

107. Hysteresis is the phenomenon in the magnetic circuit by which

(A) H lags behind B

(B) B lags behind H

(C) B and H are always same

(D) setting up a constant flux is done

108. The flux through each turn of a 100-turn coil is $(t^3 - 2t)$ mWh, where 't' is in seconds. Find the magnitude of the induced emf at t = 2 s.

(A) 1 V (B) 0·8 V

(C) 0·4 V (D) 0·2 V

109. A circuit has inductance of 2 H. If the circuit current changes at the rate of 10 A/sec, then self-induced emf is

(A) 5 V (B) 0·2 V

(C) 20 V (D) 10 V

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

110. To reduce the cost of the electricity generated

(A) the load factor and diversity factor must be low

(B) the load factor must be low but diversity factor high

(C) the load factor must be high but diversity factor low

(D) the load factor and diversity factor must be high

111. As per recommendation of ISI, the maximum number of points of lights, fans and socket outlets that can be connected in one sub-circuit is

(A) 8 (B) 10

(C) 15 (D) 20

112. In a 3-pin plug

(A) all the three pins are of the same size

(B) two pins are of the same size but third one is thicker

(C) two pins are of the same size but third one is thicker and longer

(D) all the three pins are of different sizes

113. The acceptable value of grounding resistance to domestic application is

(A) 0·1 Ω (B) 1 Ω

(C) 10 Ω (D) 100 Ω

114. Inside the earth pit, the earthing electrode should be placed

(A) vertical

(B) horizontal

(C) inclined at 45°

(D) inclined at any angle other than 45°

115. The domestic load that has UPF is

(A) Fan

(B) Mixer

(C) Tube

(D) Filament lamp

116. An industrial consumer has a daily load pattern of 2000 kW, 0·8 lag for 12 hours and 1000 kW UPF for 12 hours. The load factor is

(A) 0·5 (B) 0·75

(C) 0·6 (D) 2·0

117. Dielectric loss is proportional to

(A) $[\text{frequency}]^{1/2}$ (B) frequency

(C) frequency^2 (D) frequency^3

118. Which of the following applications needs frequent starting and stopping of electric motor ?

(A) Air-conditioner

(B) Lifts and hoists

(C) Grinding mill

(D) Paper mill

119. The colour of the light given out by a sodium vapour discharge lamp is

(A) pink (B) bluish green

(C) yellow (D) blue

120. The transformer used in a welding set is

(A) step-up transformer

(B) step-down transformer

(C) constant current transformer

(D) booster transformer

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

121. The emf induced in a DC shunt generator is 230 V. The armature resistance is 0·1 Ω. If the armature current is 200 A, the terminal voltage will be

(A) 200 V (B) 210 V

(C) 230 V (D) 250 V

122. In an autotransformer of voltage ratio $\frac{V_1}{V_2}$, $V_1 > V_2$, the fraction of power transferred inductively is proportional to

(A) $V_1/(V_1 + V_2)$

(B) V_2/V_1

(C) $(V_1 - V_2)/(V_1 + V_2)$

(D) $(V_1 - V_2)/V_1$

123. Stepped core is used in transformers in order to reduce

(A) volume of iron

(B) volume of copper

(C) iron loss

(D) reluctance of core

124. Commutation conditions at full load for large DC machines can be efficiently checked by the

(A) Brake test

(B) Swinburne's test

(C) Hopkinson's test

(D) Field test

125. Which of the following single phase motors is available with speed as low as one revolution per minute ?

(A) Shaded pole (B) Reluctance

(C) Hysteresis (D) Universal

126. A vacuum cleaner employs _____ motor.

(A) resistance split phase

(B) capacitor start

(C) shaded pole

(D) single phase series

127. In capacitor start single phase induction motor, the current in the

(A) supply lines leads the voltage

(B) starting winding lags the voltage

(C) main winding leads the voltage

(D) starting winding leads the voltage

128. The commutator of a DC generator acts as

(A) an amplifier

(B) a rectifier

(C) a load

(D) a multiplier

129. Fleming's left hand rule is applicable to

(A) DC generator

(B) DC motor

(C) Alternator

(D) Transformer

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

130. The potential barrier existing across pn junction

(A) prevents flow of minority carriers

(B) prevents flow of majority carriers

(C) prevents total recombination of holes and electrons

(D) prevents neutralisation of acceptor and donor ions

131. In a CE (common emitter) transistor, V_{CC} = 12 V and the zero signal collector current is 1 mA. Determine the operating point when collector load (R_C) is 6 kΩ.

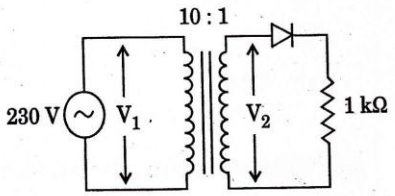
(A) 6 V, 1 mA

(B) 6 V, 2 mA

(C) 12 V, 1 mA

(D) 12 V, 2 mA

132. An AC supply of 230 V is applied to half-wave rectifier through transformer of turns ratio 10 : 1 as shown in figure. Determine the peak inverse voltage across the diode.



(A) 37·6 V (B) 32·5 V

(C) 23·0 V (D) 14·54 V

133. In a CRO, a sinusoidal waveform of a certain frequency is displayed. The value of the quantity that can be made out by observation is

(A) RMS value of the sine wave

(B) average value of the sine wave

(C) form factor of the sine wave

(D) peak-peak value of the sine wave

134. In a Cathode Ray Tube, the focussing anode is located

(A) after-accelerating anode

(B) between pre-accelerating and accelerating anodes

(C) before pre-accelerating anode

(D) just after electron-gun

135. The technique of adding a precise amount of time between the trigger point and the beginning of the scope sweep in a CRO is known as

(A) Free running sweep

(B) Delayed sweep

(C) Triggered sweep

(D) Non-sawtooth sweep

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

136. Which of the following types of wiring is preferred for workshop lighting ?

(A) Casing-Capping wiring

(B) Batten wiring

(C) Concealed conduit wiring

(D) Surface conduit wiring

137. The earthing electrodes should be placed within what distance in meters from the building whose installation system is being earthed ?

(A) 4 (B) 2·5

(C) 1·5 (D) 0·5

138. Supplier's fuse, which is provided in domestic wiring system is

(A) after the energy meter

(B) before the energy meter

(C) before distribution board

(D) after main switch

139. Power distribution by cable is generally adopted for line length

(A) less than 10 km

(B) above 10 km

(C) less than 50 km

(D) above 50 km

140. The leakage resistance of a 50 km long cable is 1 MΩ. For a 100 km long cable it will be

(A) 0·5 MΩ (B) 2 MΩ

(C) 0·66 MΩ (D) None of these

141. If voltage is increased by 'n' times, the size of the conductor would

(A) increase by 'n' times

(B) reduce by '1/n' times

(C) increase by 'n^2' times

(D) reduce by '$1/n^2$' times

142. The maximum demand of a consumer is 2 kW and his daily energy consumption is 24 units. His load factor is _____ %.

(A) 24 (B) 41·6

(C) 50 (D) 80

143. A wire placed on the top of a transmission line acts as

(A) a phase wire

(B) neutral

(C) a transmission wire

(D) ground wire

144. The conductor, by means of which the metal body of an equipment or an application is connected to the earth, is known as

(A) Neutral continuity conductor

(B) Earth discontinuity conductor

(C) Earth continuity conductor

(D) Neutral discontinuity conductor

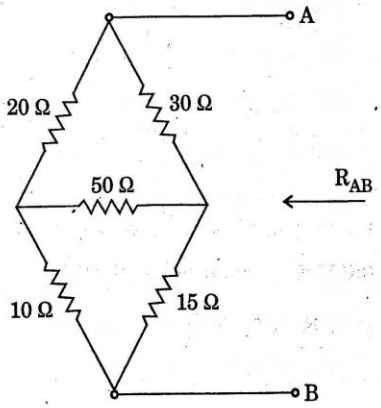
145. Which insulation is most widely used for covering wires/cables used in internal wiring ?

(A) Paper (B) Wood

(C) Glass (D) PVC

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

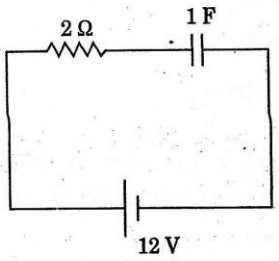
146. Find R_{AB} for the circuit shown in figure.



(A) 18 Ω (B) 30 Ω

(C) 45 Ω (D) 68 Ω

147. For the circuit shown in figure, the voltage across the capacitor during steady state condition is



(A) 0 V (B) 4 V

(C) 6 V (D) 12 V

148. A current of 5 mA flows in a resistanceless choke from a 200 V alternating source. The energy consumed in the choke is

(A) 0 J (B) 4·4 J

(C) 500 J (D) 1000 J

149. The Q-factor of a parallel resonant circuit is given by

(A) $\frac{1}{R}\sqrt{\frac{L}{C}}$ (B) $\frac{1}{R}\sqrt{\frac{C}{L}}$

(C) $\frac{1}{R}\sqrt{1/LC}$ (D) $\frac{R}{\sqrt{LC}}$

150. In an R-L series circuit, the phase difference between applied voltage and circuit current will increase if

(A) X_L is increased

(B) R is increased

(C) X_L is decreased

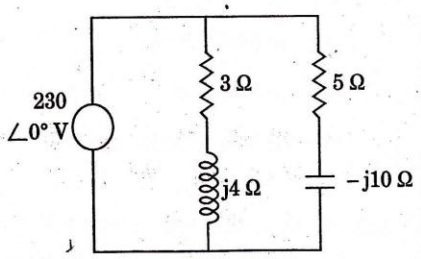
(D) supply frequency is decreased

151. A series circuit has R = 4 Ω, X_L = 12 Ω and X_C = 9 Ω and is supplied with 200 V, 50 Hz. Calculate the power.

(A) 6400 W (B) 8000 W

(C) 14,400 W (D) 19,200 W

152. Calculate the total susceptance of the circuit shown in figure.



(A) 6·67 ℧ (B) 1·87 ℧

(C) 0·16 ℧ (D) 0·08 ℧

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

D

153. In electrodynamometer ammeter, the deflection of the pointer is proportional to

(A) mean of currents in fixed coil and moving coil

(B) square of the current in moving coil

(C) RMS value of current in fixed coil

(D) mean-square of currents in fixed coil and moving coil

154. In which of the following transformers, is the secondary winding always kept closed ?

(A) Current transformer

(B) Potential transformer

(C) Power transformer

(D) Distribution transformer

155. Two holes are drilled in the disc on a diameter of energy-meter to

(A) increase ventilation

(B) reduce the weight of disc

(C) eliminate creeping on no-load

(D) increase deflecting torque

156. Which of the following instruments has the highest torque/weight ratio among the given instruments ?

(A) Attraction type MI instrument

(B) Repulsion type MI instrument

(C) Permanent magnet moving coil instrument

(D) Electrodynamometer instrument

157. Two sinusoidal currents are given by the equations $i_1 = 50 \sin (\omega t + \frac{\pi}{4})$ and $i_2 = 25 \sin (\omega t - \frac{\pi}{6})$. The phase difference between them is _____ degrees.

(A) 15 (B) 30

(C) 45 (D) 75

158. The reactance of 1 farad capacitance when connected to a DC circuit is

(A) infinite. (B) 1 Ω

(C) 0·5 Ω (D) zero ohms

159. A supply voltage of 230 V, 50 Hz is fed to a residential building. Write down its equation for instantaneous value.

(A) 163 sin 314·16 t

(B) 230 sin 314·16 t

(C) 325 sin 314·16 t

(D) 361 sin 314·16 t

160. The AC bridge used for measurement of dielectric loss of capacitor is

(A) Anderson bridge

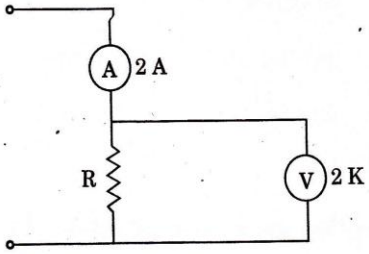
(B) Schering bridge

(C) Wien bridge

(D) Hay's bridge

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

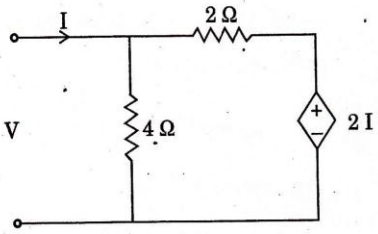
161. A resistance R is measured by ammeter-voltmeter method. The voltmeter reading is 200 V and its internal resistance is 2 K. If the ammeter reading is found to be 2 A, then value of R is



(A) 105·3 Ω (B) 100·0 Ω

(C) 95·3 Ω (D) 90·3 Ω

162. The circuit shown in the given figure is equivalent to a load of



(A) 4/3 Ω (B) 8/3 Ω

(C) 4 Ω (D) 2 Ω

163. The north pole of a magnet is moved away from a metallic ring. The induced current in the ring flows

(A) clockwise

(B) anticlockwise

(C) first anticlockwise and then clockwise

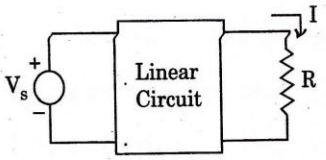
(D) first clockwise and then anticlockwise

164. For the linear circuit shown in figure,

when R = ∞, V = 20 V;

when R = 0, I = 4 A;

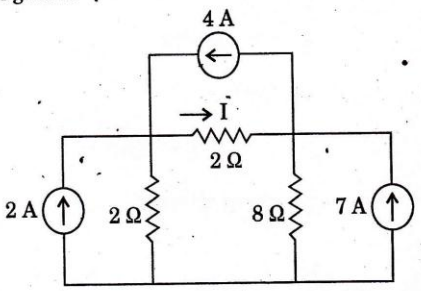
when R = 5 Ω, the current I is



(A) 1 A (B) 2 A

(C) 3 A (D) 4 A

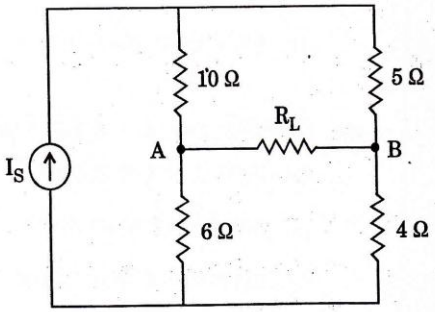
165. The current I in the circuit shown in the figure is



(A) −3·67 A (B) −1 A

(C) 4 A (D) 6 A

166. In the network shown in the figure, the value of R_L such that maximum possible power will be transferred to R_L is



(A) 5·76 Ω (B) 6·0 Ω

(C) 10·0 Ω (D) 15·0 Ω

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

167. A 200 W, 200 V bulb and a 100 W, 200 V bulb are connected in series and the voltage of 400 V is applied across the series connected bulbs. Under this condition

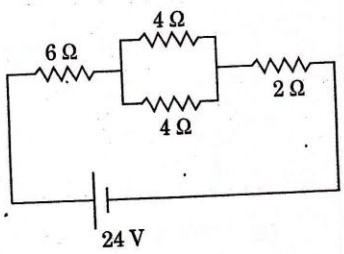
(A) 100 W bulb will be brighter than 200 W bulb

(B) 200 W bulb will be brighter than 100 W bulb

(C) Both the bulbs will have equal brightness

(D) Both the bulbs will be darker than when they are connected across rated voltage

168. In the network shown, if one of the 4 Ω resistances is disconnected, when the circuit is active, the current flowing now will



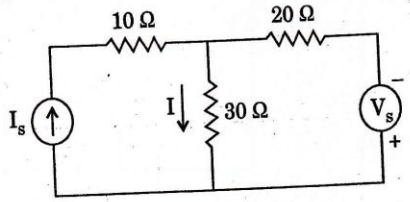
(A) increase very much

(B) decrease

(C) be zero

(D) increase very slightly

169. For the circuit shown in figure, when $V_s = 0$, I = 3 A. When V_s = 200 V, what will be the value of I ?



(A) − 4 A (B) − 1 A

(C) 1 A (D) 7 A

170. The unit of volume resistivity is

(A) ohm-m^3/m^2

(B) ohm-m^2/m

(C) ohm-gram-m/gram

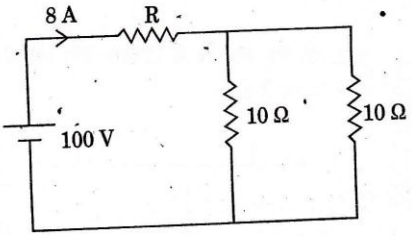
(D) ohm-m^4/m^3

171. Four resistances 2 Ω, 4 Ω, 5 Ω, 20 Ω are connected in parallel. Their combined resistance is

(A) 1 Ω (B) 2 Ω

(C) 4 Ω (D) 5 Ω

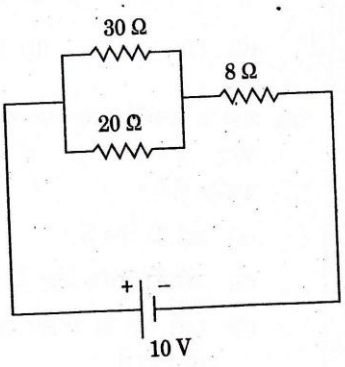
172. In the figure, the value of R is



(A) 2·5 Ω (B) 5·0 Ω

(C) 7·5 Ω (D) 10·0 Ω

173. Power consumed in the given circuit is

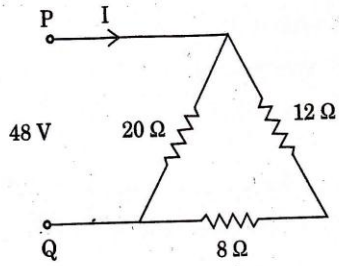


(A) 100 watts (B) 5 watts

(C) 20 watts (D) 40 watts

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

174. For the network shown in the figure, the value of current in 8 Ω resistor is



(A) 4·8 A (B) 2·4 A

(C) 1·5 A (D) 1·2 A

175. A piece of oil soaked paper has been inserted between the plates of a parallel plate capacitor. Then the potential difference between the plates will

(A) increase

(B) decrease

(C) remain unaltered

(D) become zero

176. The current drawn by a tungsten filament lamp is measured by an ammeter. The ammeter reading under steady state condition will be _____ the ammeter reading when the supply is switched on.

(A) same as (B) less than

(C) greater than (D) double

177. Tesla is same as .

(A) Weber/meter

(B) Weber/(meter)^2

(C) Farad/meter

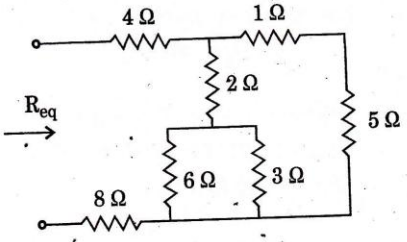
(D) Henry/(meter)^2

178. A stove element draws 15 A when connected to 230 V line. How long does it take to consume one unit of energy ?

(A) 3·45 h (B) 2·16 h

(C) 1·0 h (D) 0·29 h

179. The R_{eq} for the circuit shown in figure is



(A) 14·4 Ω (B) 14·57 Ω

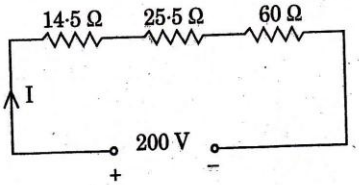
(C) 15·27 Ω (D) 15·88 Ω

180. The SI unit of conductivity is

(A) ohm-m (B) ohm/m

(C) mho-m (D) mho/m

181. Calculate the voltage drop across 14·5 Ω resistance.



(A) 14·5 V (B) 18 V

(C) 29 V (D) 30·5 V

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

182. If the excitation of an alternator operating in parallel with other alternator is increased above the normal value of excitation, its

(A) power factor becomes more lagging

(B) power factor becomes more leading

(C) output current decreases

(D) output kW decreases

183. In an alternator, the effect of armature reaction is minimum at power factor of

(A) 0·5 lagging

(B) 0·866 lagging

(C) 0·866 leading

(D) unity

184. Damper winding in synchronous motors is used to

(A) suppress hunting

(B) improve power factor

(C) develop reluctance torque

(D) improve the efficiency

185. Turbo alternators have rotors of

(A) small diameter and long axial length

(B) large diameter and long axial length

(C) large diameter and small axial length

(D) small diameter and small axial length

186. Which of the following equipments is used to limit short-circuit current level in a sub-station ?

(A) Isolators

(B) Lightning switch

(C) Coupling capacitor

(D) Series reactor

187. At starting, the current through the starting winding (I_s) of single phase induction motor

(A) lags 'V' by 90°

(B) leads 'V' by 90°

(C) is nearly in phase with 'V'

(D) leads 'V' by 75°

188. In a single phase induction motor at start, the two revolving fields produce

(A) unequal torques in the rotor conductors

(B) no torque in the rotor conductor

(C) equal and opposite torques in the rotor conductors

(D) equal torques in same direction in the rotor conductors

189. A synchronous motor can be used as synchronous condenser when it is

(A) over excited

(B) over loaded

(C) under excited

(D) under loaded

190. Which one of the following methods would give a higher than actual value of regulation of an alternator ?

(A) ZPF method (B) MMF method

(C) EMF method (D) ASA method

191. In a single phase induction motor, speed sensitive centrifugal switch is connected in _____ winding.

(A) parallel with main

(B) series with main

(C) parallel with starting

(D) series with starting

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान

192. The multiplying power of the shunt of a milliammeter is 8. If the circuit current is 200 mA, then current through the meter is

(A) 25 mA (B) 200 mA

(C) 1600 mA (D) 3200 mA

193. If current through the operating coil of a moving iron instrument is doubled, the operating force becomes

(A) one and a half times

(B) 2 times

(C) 3 times

(D) 4 times

194. In moving iron instruments, the iron moves in a direction to cause

(A) coil inductance to be constant

(B) mutual inductance to be minimum

(C) minimum reluctance path

(D) decrease in the flux passing through it

195. A moving coil instrument has a resistance of 10 Ω and gives full scale deflection at 0·5 V potential difference across it. How can it be adapted to measure a current upto 100 A ?

(A) By connecting shunt resistance of 0·005 Ω across the meter

(B) By connecting shunt resistance of 0·05 Ω across the meter

(C) By connecting shunt resistance of 5 Ω across the meter

(D) By connecting shunt resistance of 10 Ω across the meter

196. Low voltage windings are placed nearer to the core in the case of concentric windings because

(A) it reduces hysteresis loss

(B) it reduces eddy current loss

(C) it reduces insulation requirement

(D) it reduces leakage fluxes

197. If K is the phase-to-phase voltage ratio, then the line-to-line voltage ratio in a 3-phase, Y – Δ transformer is

(A) K (B) $K/\sqrt{3}$

(C) $\sqrt{3}\,K$ (D) $\sqrt{3}/K$

198. The material to be used in the manufacture of a standard resistor should be of

(A) low resistivity

(B) high resistivity and low temperature coefficient

(C) high temperature coefficient

(D) low resistivity and high temperature coefficient

199. In a 3-phase induction motor crawling happens at

(A) any speed

(B) no-load speed

(C) odd multiples of fundamental

(D) even multiples of fundamental

200. A 4-pole, 3-phase induction motor runs at 1440 rpm on a 50 Hz supply. Find the slip speed.

(A) 2940 rpm (B) 1500 rpm

(C) 1440 rpm (D) 60 rpm

SPACE FOR ROUGH WORK / रफ़ कार्य के लिए स्थान