

# SSC Junior Engineer Examination

Held On : 31.01.2016

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

Booklet Serial No.

1231849

JA 2015

PAPER I

प्रश्नपत्र I

Electrical

विद्युत

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 अंग्रेजी तथा हिन्दी दोनों में दिये गये हैं।

## INSTRUCTIONS TO CANDIDATES

- This Booklet contains 200 questions in all comprising the following three tests :  
Test I : General Intelligence & Reasoning (50 Questions)  
Test II : General Awareness (50 Questions)  
Test III : General Engineering (Electrical) (100 Questions)
- In questions set bilingually in English and Hindi, in case of discrepancy, the English version will prevail.
- All questions are compulsory and carry equal marks.
- The paper carries negative marking. 0-25 marks will be deducted for each wrong answer.
- Before you start to answer the questions you must check up this Booklet and ensure that it contains all the pages (1-32) and see that no page is missing or repeated. If you find any defect in this Booklet, you must get it replaced immediately.
- 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, Booklet Serial No. and Stream i.e. Civil and Structural OR Electrical OR Mechanical etc., in 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.
- Answers must be shown by completely blackening the corresponding circle 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.
- 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.
- The Answer Sheet must be handed over to the Invigilator before you leave the Examination-Hall.
- Failure to comply with any of the above instructions will render a candidate liable to such action/penalty as may be deemed fit.
- The manner in which the different questions are to be answered has been explained at the back of this Booklet (Page No. 32), which you should read carefully before actually answering the questions.
- 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.
- No rough work is to be done on the Answer Sheet. Space for rough work has been provided below the questions.
- "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

- 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 : सामान्य इंजीनियरी (विद्युत) (100 प्रश्न)
- अंग्रेजी और हिन्दी भाषा में तैयार किए गए द्विभाषी प्रश्नों में कोई विसंगति होने की स्थिति में अंग्रेजी विवरण मान्य होगा।
- सभी प्रश्न अनिवार्य हैं तथा सबके बराबर अंक हैं।
- प्रश्न पत्र में नकारात्मक अंकन होगा। हर गलत उत्तर के लिए 0-25 अंक काटा जाएगा।
- प्रश्नों के उत्तर देने से पहले आप इस पुस्तिका की जांच करके देख लें कि इसमें पूरे पृष्ठ (1-32) हैं तथा कोई पृष्ठ कम या दुबारा तो नहीं आ गया है। यदि आप इस पुस्तिका में कोई त्रुटि पाएं, तो तत्काल इसके बदले दूसरी पुस्तिका ले लें।
- निरीक्षक द्वारा आपको उत्तर-पत्रिका अलग से दी जाएगी। प्रश्नों के उत्तर वास्तव में शुरू करने से पहले आप उत्तर-पत्रिका के नियमावली के अनुसार अपना नाम, रोल नम्बर, टिकट नम्बर, पुस्तिका क्रम 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 बाएं हाथ के अंगूठे का निशान भी अवश्य लगाएं। उपर्युक्त अनुदेशों का पूरी तरह अनुपालन किया जाए, अन्यथा आपकी उत्तर-पत्रिका को जांचा नहीं जायेगा और 'शून्य' अंक दिया जाएगा।
- उत्तर-पत्रिका में सभी उत्तर Side-II में प्रश्न संख्या के सामने दिये गये सम्बन्धित गोलाकार छानों को केवल काला/नीला बॉल-पॉइंट पेन से पूरी तरह काला करके दिखाएं। जो गोलाकार छाने काला/नीला बॉल-पॉइंट पेन से नहीं भरे जाएंगे, उनके लिए कोई अंक नहीं दिया जाएगा।
- 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।
- परीक्षा-भवन छोड़ने से पहले परीक्षार्थी को उत्तर-पत्रिका निरीक्षक के हवाले कर देनी चाहिए।
- 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।
- विभिन्न प्रश्नों के उत्तर देने की विधि इस पुस्तिका के पीछे (पृष्ठ संख्या 32) में छपे हुए निर्देशों में दे दी गई है, इसे आप प्रश्नों के उत्तर देने से पहले ध्यानपूर्वक पढ़ लें।
- 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 लगाएं।
- कोई रफ कार्य उत्तर-पत्रिका पर नहीं करना है। रफ कार्य के लिए स्थान प्रश्नों के नीचे दिया गया है।
- "परीक्षा हॉल/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 पर परीक्षा में अनुचित उपायों का प्रयोग माना जाएगा और उनके विरुद्ध कार्रवाई की जाएगी, उनकी अभ्यर्थिता रद्द कर देने सहित।"

इस पुस्तिका की सील/पॉलीथीन बैग तब तक न खोलें जब तक कहा न जाए

## TEST - I : GENERAL INTELLIGENCE & REASONING

**Directions :** In question nos. 1 to 9, select the related word/letters/number from the given alternatives.

1. CHAIR : FURNITURE :: FORK : ?  
 (A) SPOON (B) CUTLERY  
 (C) CROCKERY (D) FOOD
2. Compass : Ship :: Vaastu : ?  
 (A) Building (B) Flat  
 (C) Home (D) Land
3. BOOK : LIBRARY :: ? : FILE  
 (A) COMPUTER (B) DATA  
 (C) FOLDER (D) BYTES
4. q : d :: b : ?  
 (A) p (B) d (C) q (D) b
5. ABB : EGJ :: FHL : ?  
 (A) BDH (B) JMT (C) FHH (D) JIL
6. EV : KP :: TG : ?  
 (A) ZA (B) AZ (C) ZZ (D) AA
7. 21 : 65 :: 31 : ?  
 (A) 78 (B) 80 (C) 85 (D) 95
8. 17 : 102 :: 23 : ?  
 (A) 112 (B) 138 (C) 216 (D) 413
9. 25 : 36 :: ?  
 (A) 9 : 25 (B) 16 : 25  
 (C) 25 : 49 (D) 81 : 121

**Directions :** In question nos. 10 to 17, find the odd word/number/letters/number pair from the given alternatives.

10. (A) stare (B) glance  
 (C) look (D) hug
11. (A) Analogy (B) Reasoning  
 (C) Decoding (D) Cycling
12. (A) Nephrology (B) Astrology  
 (C) Pathology (D) Entomology
13. (A) accdff (B) prrsuu  
 (C) mnnoqq (D) egghjj
14. (A) OQTX (B) JMNQ  
 (C) EGJN (D) XZCG

15. (A) NMOK (B) PKQJ  
 (C) RLSK (D) TGUF
16. (A) 997 (B) 976 (C) 778 (D) 895
17. (A) 8 (B) 87 (C) 111 (D) 96
18. Pick the odd number from the sequence below:  
 2, 3, 6, 7, 11, 15, 30  
 (A) 7 (B) 11 (C) 6 (D) 30

**Directions :** In question nos. 19 to 21, which one of the given responses would be a meaningful order of the following ?

19. 1. Village 2. State  
 3. Nation 4. District  
 (A) 1, 2, 4, 3 (B) 1, 4, 2, 3  
 (C) 2, 3, 1, 4 (D) 4, 2, 3, 1
20. 1. Branches 2. Root 3. Trunk  
 4. Leaf 5. Flower  
 (A) 4, 1, 3, 2, 5 (B) 2, 3, 1, 4, 5  
 (C) 1, 2, 3, 4, 5 (D) 4, 3, 1, 2, 5
21. 1. Adulthood 2. Babyhood  
 3. Childhood 4. Infancy  
 (A) 4, 3, 2, 1 (B) 4, 2, 3, 1  
 (C) 4, 1, 2, 3 (D) 4, 3, 1, 2

**Directions :** In question nos. 22 to 27, a series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.

22. CDDP DEER EFFT FGGV GHHX ?  
 (A) ZIIH (B) HIIZ  
 (C) HJJY (D) HIJZ
23. l m n m n o p n o p q r ?  
 (A) pqrst (B) lmnop  
 (C) opqrs (D) hpqrs
24. R I A T N I E ?  
 (A) A (B) B (C) C (D) D
25.  $\left(\frac{1}{8}\right), \left(\frac{1}{4}\right), \left(\frac{1}{2}\right), 1, ?, 4$   
 (A)  $\left(\frac{3}{8}\right)$  (B)  $\left(\frac{2}{8}\right)$  (C) 2 (D) 6

**SPACE FOR ROUGH WORK**

26. 11, 12, 16, 25, ?  
 (A) 45 (B) 41 (C) 43 (D) 49
27. 3, 9, 21, 45, ?  
 (A) 54 (B) 78 (C) 87 (D) 93
28. Ramu's mother has three sons. The eldest one is called onekari, the second one is called twokari. Then the third son's name is  
 (A) Teenkari (B) Sandu  
 (C) Ramu (D) Nokari
29. Ashok is heavier than Gopal. Mahesh is lighter than Jayesh. Prashant is heavier than Jayesh but lighter than Gopal. Who among them is heaviest?  
 (A) Gopal (B) Ashok  
 (C) Prashant (D) Mahesh
30. From the given alternative words, select the word which cannot be formed using the letters of the given word:  
 KILOMETERS  
 (A) OIL (B) MEET  
 (C) TREES (D) STREET
31. In a certain code language, if the word 'RHOMBUS' is coded as Tjqodwu, then how is the word 'RECTANGLE' in that language?  
 (A) TGEVCPIMG (B) TGEVCPING  
 (C) TGEWDPING (D) TGFWEPIING
32. If in a certain code 'Education' is written as 3 6 5 7 9 8 2 1 4 then how 'Conduct' can be written?  
 (A) 7 1 4 6 5 7 8 (B) 6 5 4 7 8 7 1  
 (C) 1 4 5 8 7 7 6 (D) 6 4 8 5 7 6 7
33. If  $7x = 8k$  and  $5y = 6k$ , then the value of ratio  $x$  is to  $y$  is  
 (A) 20 : 21 (B) 21 : 20  
 (C) 35 : 48 (D) 48 : 35

34. If  $44 + 12 = 30$ ,  $77 + 14 = 61$ ,  $84 + 16 = 66$  then what should be for  $44 + 22 = ?$   
 (A) 28 (B) 20 (C) 32 (D) 24
35. Select the set of symbols which can be fitted correctly in the equation,  
 $8 \quad 4 \quad 2 \quad 6 \quad 3 = 32$   
 (A)  $\times, -, +, \div$  (B)  $+, \times, +, -$   
 (C)  $+, \div, \times, -$  (D)  $-, \times, +, +$

**Directions :** In question nos. 36 and 37, select the missing number from the given responses.

36.

13	15	12
02	04	05
04	05	08
30	65	?

- (A) 64 (B) 69 (C) 65 (D) 68

37. 20 30 12

3 4 8

80 ? 116

- (A) 120 (B) 60 (C) 100 (D) 140

38. Hospital is 12 km towards east of Rupin's house. His school is 5 km towards south of Hospital. What is the shortest distance between Rupin's house and school?

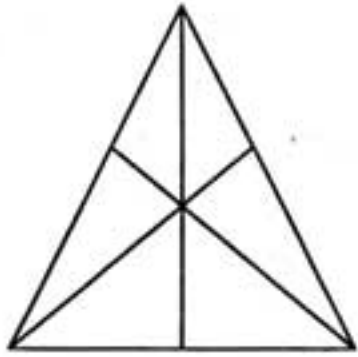
- (A) 16 km (B) 17 km  
 (C) 12 km (D) 13 km

39. Two cars started from a particular spot. The car A ran straight at the speed of 30 kmph for 2 hours north and then took a right turn. It ran 40 km and again turned right. It stopped after 30 km. The car B ran straight towards east at the speed of 20 kmph for 2 hours and turned left. It ran for 10 km and then stopped. How far were these two cars from each other when both of them stopped at last?

- (A) 17 km (B) 18 km  
 (C) 19 km (D) 20 km

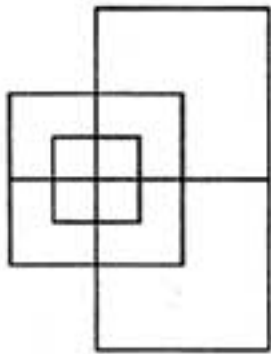
SPACE FOR ROUGH WORK

40. How many triangles are there in the figure ?



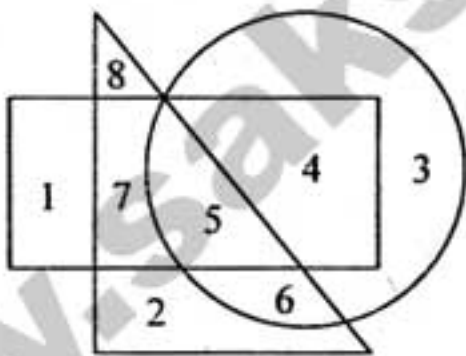
- (A) 7 (B) 10 (C) 16 (D) 20

41. Find the number of minimum straight lines required to make figure.



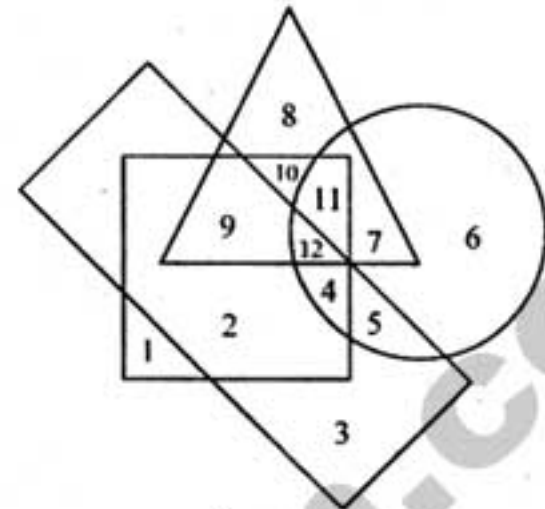
- (A) 13 (B) 17 (C) 15 (D) 19

42. Write the number of space enclosed by rectangle and circle but not by triangle.



- (A) 3 (B) 2 (C) 1 (D) 4

43. In the given figure, the circle stands for intelligent, square for hardworking, triangle for Post graduate and the rectangle for loyal employees. Study the figure and answer the following questions.



Employees who are intelligent, hardworking and loyal but not Post graduate are represented by

- (A) 11 (B) 5 (C) 4 (D) 3

**Directions :** In question nos. 44 and 45, one/two statement(s) are given followed by two conclusion/assumption, I and II. You have to consider the statements to be true even if they seem to be at variance from commonly known facts. You have to decide which of the given conclusion/assumptions, if any, follows from the given statements.

44. Statements : All students are girls.  
Some students are not talented.  
Conclusions : I. No student is talented.  
II. Some girls are talented.

- (A) Only I follows  
(B) Only II follows  
(C) Both I and II follow  
(D) Neither I nor II follows

45. Statements : 1. Tigers do not fly.  
2. Hens do not fly.  
Conclusions : I. Tigers are birds.  
II. All birds cannot fly.

- (A) Only I follows  
(B) Only II follows  
(C) Either I or II follows  
(D) Neither I nor II follows

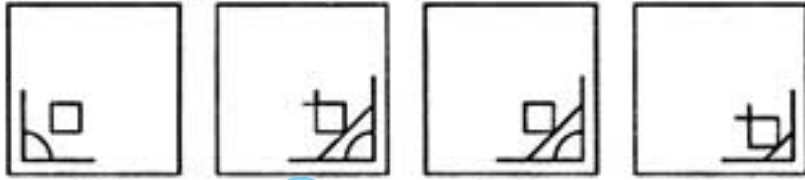
SPACE FOR ROUGH WORK

46. Which answer figure will complete the pattern in the question figure?

Question figure



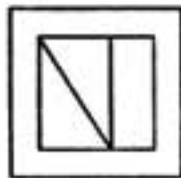
Answer figures



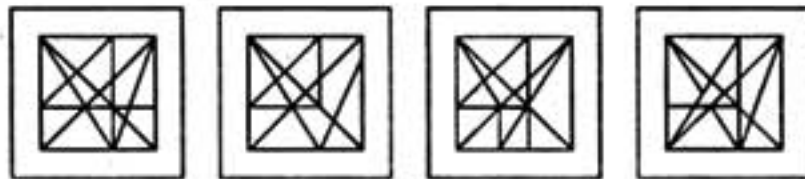
(A) (B) (C) (D)

47. From the given answer figures, select the one in which the question figure is hidden/embedded.

Question figure



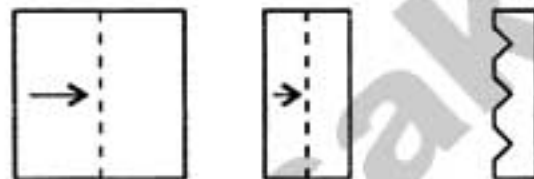
Answer figures



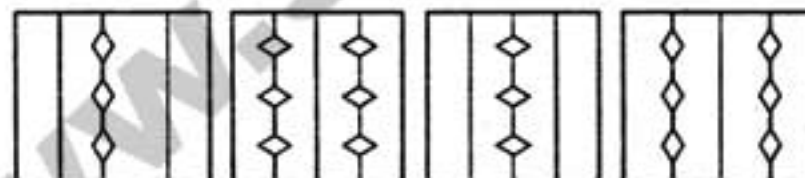
(A) (B) (C) (D)

48. A piece of paper is folded and cut as shown below in the question figures. From the given answer figures, indicate how it will appear when opened.

Question figures



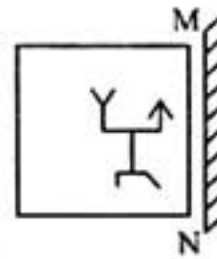
Answer figures



(A) (B) (C) (D)

49. If a mirror is placed on the line MN, then which of the answer figures is the right image of the given figure?

Question figure



Answer figures



(A) (B) (C) (D)

50. A word is represented by only one set of numbers as given in any one of the alternatives. The sets of numbers given in the alternatives are represented by two classes of alphabets as in two matrices given below. The columns and rows of Matrix I are numbered from 0 to 4 and that of Matrix II are numbered from 5 to 9. A letter from these matrices can be represented first by its row and next by its column, e.g., 'M' can be represented by 01, 14 etc., and 'S' can be represented by 58, 77 etc. Similarly, you have to identify the set for the word 'ROHAN'.

Matrix I

	0	1	2	3	4
0	H	M	X	W	K
1	N	R	N	Y	M
2	K	V	H	P	W
3	Y	Z	R	M	N
4	W	V	H	J	P

Matrix II

	5	6	7	8	9
5	A	D	E	S	B
6	T	U	O	G	Q
7	O	Q	S	D	A
8	S	E	U	E	D
9	Q	B	A	T	O

- (A) 11, 57, 00, 55, 12  
 (B) 11, 75, 00, 55, 10  
 (C) 32, 75, 21, 55, 10  
 (D) 32, 67, 41, 55, 12

SPACE FOR ROUGH WORK

## TEST – II : GENERAL AWARENESS

51. Name the co-operative society that provides housing loan facility at reasonable rates  
(A) Credit co-operatives  
(B) Housing co-operatives  
(C) Consumer co-operatives  
(D) Producer's co-operatives
52. Name the biggest employer in India  
(A) Steel Authority of India Ltd (SAIL)  
(B) Post & Telecom Department  
(C) Food Corporation of India (FCI)  
(D) Indian Railways
53. Which of the following is an allied activity of agriculture ?  
(A) Livestock  
(B) Small Scale Industry  
(C) Money lending  
(D) Insurance
54. Disguised unemployment means  
(A) Working as Self-Employed  
(B) Not working whole day  
(C) Marginal Productivity is zero  
(D) Production is less
55. Cartel is a part of  
(A) Monopoly  
(B) Oligopoly  
(C) Perfect competition  
(D) Monopolistic competition
56. In the presidential system of government, the President is  
(A) Head of the state  
(B) Head of the state and Head of the Government  
(C) Head of the Government  
(D) Head of the Executive
57. The Chief Election Commissioner of India is appointed by  
(A) Chief Justice of India  
(B) Prime Minister  
(C) President  
(D) Parliament
58. The Election Commission of India is  
(A) An independent body  
(B) Quasi-judicial body  
(C) Quasi-legislative body  
(D) Executive body
59. Articles 23 and 24 of the Indian Constitution deal with  
(A) Right against Exploitation  
(B) Right to Freedom  
(C) Right to Freedom of Religion  
(D) Right to Education
60. Which of the following ideologies aims at the spiritualization of politics ?  
(A) Marxism (B) Socialism  
(C) Sarvodaya (D) Pluralism
61. Which Delhi Sultan resorted to price control and rationing ?  
(A) Balban  
(B) Muhammad-bin-Tughluq  
(C) Bahlul Lodi  
(D) Alaud-din-Khilji
62. The Maratha ruler Shivaji ruled his kingdom with the help of a Council of Ministers called  
(A) Ashtapradan (B) Ashtadigajas  
(C) Navarathnas (D) Mantriparishad
63. Ms. Florence Nightingale was associated with  
(A) Seven Years War  
(B) Thirty Years War  
(C) Crimean War  
(D) Hundred Years War
64. Who among the following Gupta emperor was known as 'Vikramaditya' ?  
(A) Samudra Gupta  
(B) Kumar Gupta  
(C) Chandra Gupta I  
(D) Chandra Gupta II
65. The finely painted cotton fabric made in Golkonda was called  
(A) Calico (B) Muslin  
(C) Kalamkari (D) Palampore
66. Which is the best type of cotton grown in the world ?  
(A) Long staple (B) Medium staple  
(C) Short staple (D) Thick staple

67. Which one of the following is first multi-purpose project constructed in India?  
 (A) Rihand (B) Thungabhadra  
 (C) Farraka Barrage (D) Damodar
68. What is the symbol of (WWF) World Wildlife Fund? **Correct Answer is Gaint Panda**  
 (A) Red Panda (B) Rhododendron  
 (C) Bear (D) White Tiger
69. Market Gardening comes in this category  
 (A) Horticulture  
 (B) Monoculture  
 (C) Subsistence farming  
 (D) Sericulture
70. A deep or french in the ocean floor is called  
 (A) Ridges  
 (B) Crest  
 (C) Trough  
 (D) Continental Shelf
71. The storage form of glucose is  
 (A) Insulin (B) Glycogen  
 (C) Glucagon (D) Fructose
72. Thigmotropism is the response of the plant to  
 (A) Gravity (B) Water  
 (C) Light (D) Contact
73. Root hairs are produced from  
 (A) trichomes (B) trichoblasts  
 (C) rhizodermis (D) epidermis
74. Second Ozone hole was detected over  
 (A) Antarctica  
 (B) Artica  
 (C) Sweden  
 (D) Northern hemisphere
75. Glycolysis during fermentation results in net gain of  
 (A) 1 ATP (B) 2 ATPs  
 (C) 3 ATPs (D) 4 ATPs
76. The disadvantage of self-pollination is  
 (A) seeds are less in number  
 (B) no dependence of pollinating agents  
 (C) mechanism is too simple  
 (D) no wastage of pollengrains
77. By increasing the intensity of incident light on the surface, the photo electric current  
 (A) increases  
 (B) decreases  
 (C) unchanged  
 (D) increases initially and then decreases
78. The Phenomenon of light spiltting into seven distinct colours when it passes through prism is  
 (A) diffraction (B) polarisation  
 (C) dispersion (D) reflection
79. A block placed on an inclined plane of slope angle  $\theta$  slides down with a constant speed. The coefficient of kinetic friction is equal to  
 (A)  $\sin \theta$  (B)  $\cos \theta$   
 (C)  $\tan \theta$  (D)  $\cot \theta$
80. A plumb bob is hanging from the ceiling of a car. If the car moves with an acceleration  $a$ , the angle made by the string with the vertical is  
 (A)  $\sin^{-1}\left(\frac{a}{g}\right)$  (B)  $\sin^{-1}\left(\frac{g}{a}\right)$   
 (C)  $\tan^{-1}\left(\frac{a}{g}\right)$  (D)  $\tan^{-1}\left(\frac{g}{a}\right)$
81. .com represents ?  
 (A) Communication domain  
 (B) Educational domain  
 (C) Commercial domain  
 (D) Government domain
82. IKE stands for  
 (A) Internet Key Exchange  
 (B) Information Key Execution  
 (C) Information Key Exchange  
 (D) Infrastructure Key Encryption
83. When salt is added to water, the boiling point of water is  
 (A) Lowered (B) Unaffected  
 (C) Increased (D) Constant
84. The gas dissolved in water that makes it acidic is  
 (A) hydrogen (B) nitrogen  
 (C) carbon dioxide (D) ammonia

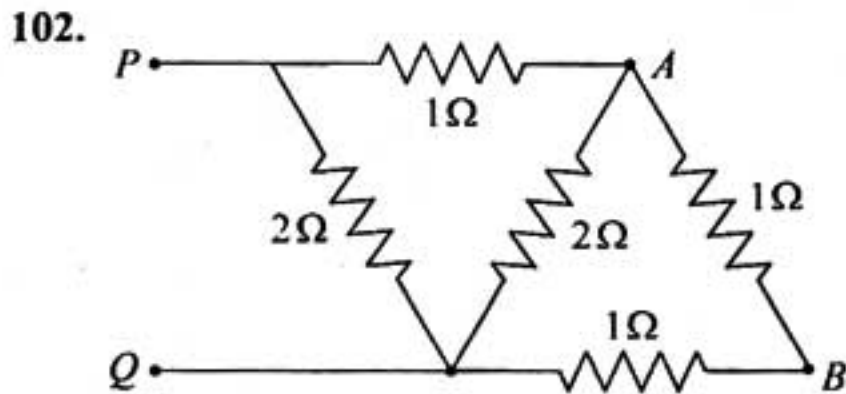
85. The hydrogen ion concentration of a solution is measured using a  
(A) thermometer (B) pH meter  
(C) hydrometer (D) barometer
86. Non-bonding valence electrons are  
(A) Involved only in covalent bond formation  
(B) Involved only in ionic bond formation  
(C) Involved in both ionic and covalent bond formation  
(D) Not involved in covalent bond formation
87. When is the World Earth Day celebrated?  
(A) 4 April (B) 22 April  
(C) 1 May (D) 23 March
88. World "No Tobacco Day" was observed globally on  
(A) 31 May (B) 2 June  
(C) 15 June (D) 20 June
89. The greenhouse gases, otherwise called radioactively active gases include  
(A) Carbon dioxide (B)  $\text{CH}_4$   
(C)  $\text{N}_2\text{O}$  (D) All of these
90. The most serious environmental effect posed by hazardous wastes is  
(A) air pollution  
(B) contamination of ground water  
(C) increased use of land for landfills  
(D) None of the above
91. Who is called the 'Father of Indian Cinema' ?  
(A) Raj Kapoor  
(B) Dilip Kumar  
(C) Mehboob Khan  
(D) Dada Saheb Phalke
92. Name the first Indian woman to climb Mount Everest  
(A) Santosh Yadav (B) Bachhendri Pal  
(C) Rita Faria (D) Leela Seth
93. Which IPL Team won the eighth edition of the Indian Premier League ?  
(A) Mumbai Indians  
(B) Chennai Super Kings  
(C) Delhi Daredevils  
(D) Kolkata Knight Riders
94. Nehru Trophy is associated with which sport in India ?  
(A) Football  
(B) Cricket  
(C) Hockey  
(D) None of the above
95. Aung San Suu Kyi, a prodemocracy campaigner, is from which of the following countries ?  
(A) Nepal (B) Myanmar  
(C) Bangladesh (D) China
96. Usain Bolt is famous as  
(A) an astronaut (B) a boxer  
(C) an athlete (D) a cricketer
97. Which of the following is the morning 'Raag' in music ?  
(A) Sohini (B) Bhairavi  
(C) Sarang (D) Malhaar
98. When was the first All India Postage Stamp issued ?  
(A) 1854 (B) 1858  
(C) 1850 (D) 1856
99. In which country was paper currency first used ?  
(A) India (B) Egypt  
(C) China (D) Japan
100. The murder of Archduke Ferdinand and his wife triggered off which of the following events ?  
(A) Crimean War  
(B) Balkan War  
(C) First World War  
(D) Second World War



## TEST – III : GENERAL ENGINEERING (ELECTRICAL)

101. If two capacitances  $C_1$  and  $C_2$  are connected in parallel then the equivalent capacitance is given by

- (A)  $C_1 C_2$                       (B)  $\frac{C_1}{C_2}$   
 (C)  $\frac{C_1 C_2}{C_1 + C_2}$               (D)  $C_1 + C_2$



For the circuit shown find the resistance between points  $P$  &  $Q$ .

- (A)  $1\Omega$    (B)  $2\Omega$    (C)  $3\Omega$    (D)  $4\Omega$
103. A resistor is connected across a 50 V source. The current in the resistor if the colour code is red, orange, orange, silver is  
 (A) 2 mA                      (B) 2.2 mA  
 (C) 214 mA                      (D) 21.4 mA
104. A primary cell has an e.m.f. of 1.5 V. When short circuited, it gives a current of 3 A. The internal resistance of cell is  
 (A)  $4.5\Omega$                       (B)  $2\Omega$   
 (C)  $0.2\Omega$                       (D)  $0.5\Omega$
105. Electrical resistivity  $\rho$  is  
 (A) Low for copper and high for alloy  
 (B) High for copper and low for alloy  
 (C) Low for copper as well as for alloy  
 (D) High for copper as well as for alloy
106. The rate of change of current in a 4 H inductor is 2 Amps/sec. Find the voltage across inductor.  
 (A) 8 V                      (B) 0.8 V  
 (C) 2 V                      (D) 16 V

107. How much energy is stored by a 100 mH inductance when a current of 1 A is flowing through it?

- (A) 0.5 J                      (B) 0.05 J  
 (C) 0.005 J                      (D) 5.0 J

108. What is the Power consumed by the resistor of  $20\Omega$  connected across 100 V source?

- (A) 500 W                      (B) 50 W  
 (C) 100 W                      (D) 300 W

109. A linear circuit is one whose parameters

- (A) change with change in current  
 (B) change with change in voltage  
 (C) do not change with voltage and current  
 (D) None of the above

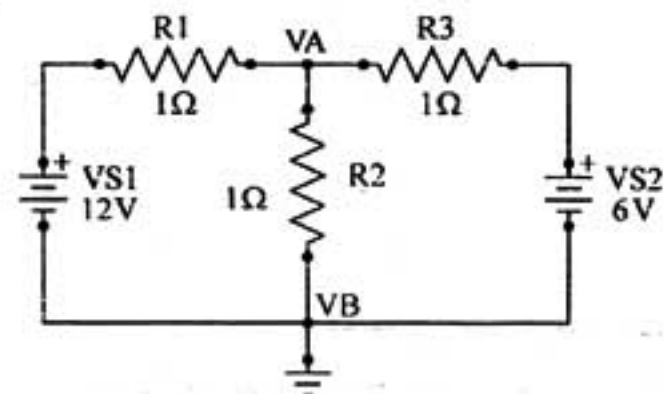
110. An active element in a circuit is one which

- (A) supplies energy  
 (B) receives energy  
 (C) dissipates energy  
 (D) both receives and supplies energy

111. If  $750\mu\text{A}$  is flowing through  $11\text{k}\Omega$  of resistance, what is the voltage drop across the resistor?

- (A) 8.25 V                      (B) 82.5 V  
 (C) 14.6 V                      (D) 146 V

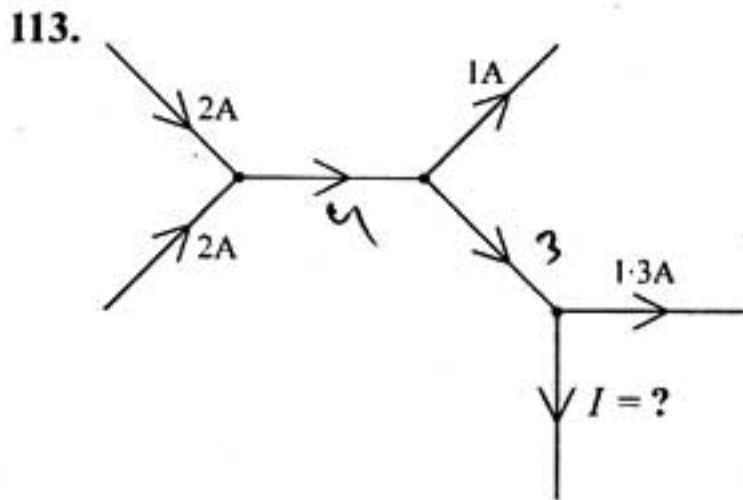
112.



Find the node voltage  $V_A$ .

- (A) 6 V                      (B) 5 V  
 (C) 5.66 V                      (D) 6.66 V

SPACE FOR ROUGH WORK



The current  $I$  in the electric circuit shown is

- (A) 1.7 A (B) 1 A  
(C) 2.7 A (D) 3.7 A

114. The superposition theorem is used when the circuit contains

- (A) a single voltage source  
(B) a number of voltage sources  
(C) passive elements only  
(D) active elements only

115. Thevenin's theorem cannot be applied to

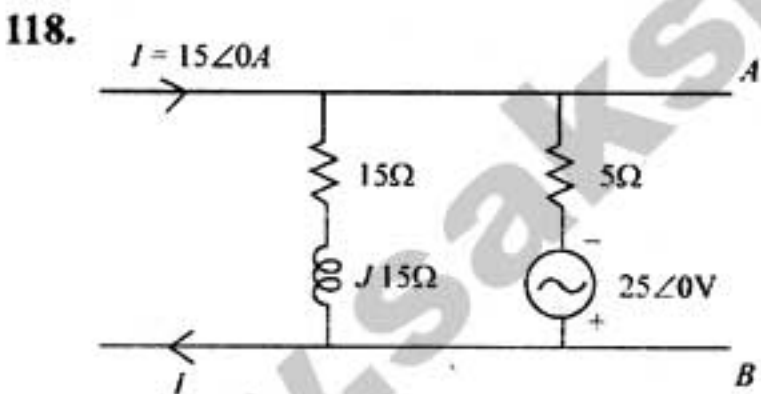
- (A) active circuit (B) linear circuit  
(C) nonlinear circuit (D) passive circuit

116. A node in a circuit is defined as a

- (A) closed path  
(B) junction of two or more elements  
(C) group of interconnected elements  
(D) open terminal of an element

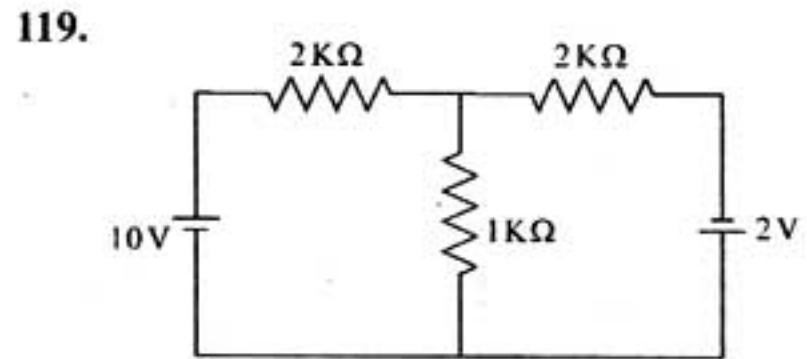
117. When a source is delivering maximum power to the load, the efficiency will be

- (A) maximum (B) below 50%  
(C) above 50% (D) 50%



For the circuit shown, the Norton's equivalent current source at terminals  $A$  &  $B$  is given by

- (A)  $10\angle 0A$  (B)  $20\angle 0A$   
(C)  $16\angle 36.86A$  (D)  $14\angle 36.86A$



The voltage across the  $1\text{ k}\Omega$  resistor of the network shown in the given figure is

- (A) 6 V (B) 4 V  
(C) 2 V (D) 1 V

120. The internal resistance of a voltage source is  $10\Omega$  and has 10 volts at its terminals. Find the maximum power that can be transferred to the load.

- (A) 0.25 W (B) 25 W  
(C) 2.5 W (D) 5 W

121. Mutual inductance between two coils is 4 H. If current in one coil changes at the rate of 2 A/sec, then emf induced in the other coil is

- (A) 8 V (B) 2 V  
(C) 0.5 V (D) 5.0 V

122. If the number of turns of a coil is increased, its inductance

- (A) remains the same  
(B) is increased  
(C) is decreased  
(D) None of the above

123. The e.m.f. induced in a coil of  $N$  turns is given by

- (A)  $\frac{d\phi}{dt}$  (B)  $N\frac{d\phi}{dt}$   
(C)  $-N\frac{d\phi}{dt}$  (D)  $N\frac{dt}{d\phi}$

124. When the current through the coil of an electromagnet reverses, the

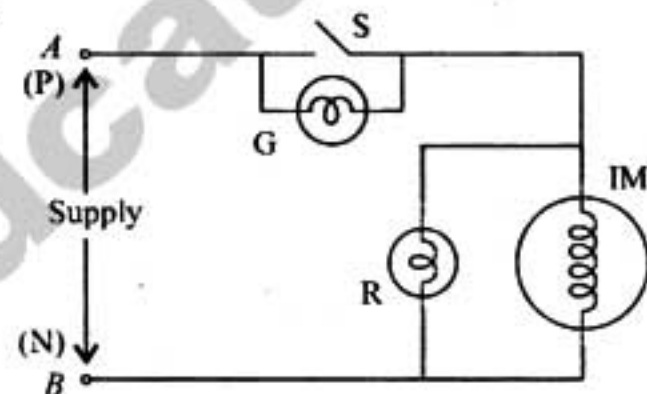
- (A) direction of the magnetic field reverses  
(B) direction of the magnetic field remains unchanged  
(C) magnetic field expands  
(D) magnetic field collapses

SPACE FOR ROUGH WORK

125. The unit for permeability is  
 (A)  $Wb/At \times m$  (B)  $At/m$   
 (C)  $At/Wb$  (D)  $Wb$
126. If the co-efficient of coupling between two coils is increased, mutual inductance between the coils  
 (A) is decreased  
 (B) is increased  
 (C) remains unchanged  
 (D) changes depends on current only
127. The magnitude of  $AT$  required to establish a given value of flux in the airgap will be much greater than that required for iron part of a magnetic circuit, because  
 (A) air is a gas  
 (B) air is a good conductor of magnetic flux  
 (C) air has the lowest relative permeability  
 (D) iron has the lowest permeability
128. The area of the hysteresis loop will be least for one of the following materials. It is  
 (A) wrought iron (B) hard steel  
 (C) silicon steel (D) soft iron
129. A current of 2 A passes through a coil of 350 turn wound on a ring of mean diameter 12 cm. The flux density established in the ring is  $1.4 \text{ wb/m}^2$ . Find the value of relative permeability of iron.  
 (A) 191 (B) 600  
 (C) 1200 (D)  $210 \times 10^3$
130. A bar of iron  $1 \text{ cm}^2$  in cross-section has  $10^{-4} \text{ wb}$  of magnetic flux in it. If  $\mu_r = 2000$  what is the magnetic field intensity in the bar?  
 (A)  $398 \times 10^{-4} \text{ AT/m}$  (B)  $398 \text{ AT/m}$   
 (C)  $796 \times 10^3 \text{ AT/m}$  (D)  $398 \times 10^4 \text{ AT/m}$

131. One sine wave has a period of 2 ms, another has a period of 5 ms, and other has a period of 10 ms. Which sine wave is changing at a faster rate?  
 (A) Sine wave with period 2 ms  
 (B) Sine wave with period of 5 ms  
 (C) All are at the same rate  
 (D) Sine wave with period of 10 msec
132. In a pure inductive circuit if the supply frequency is reduced to  $\frac{1}{2}$ , the current will  
 (A) be reduced by half  
 (B) be doubled  
 (C) be four times as high  
 (D) be reduced to one fourth
133. There are 3 lamps 40 W, 100 W and 60 W. To realise the full rated power of the lamps they are to be connected in  
 (A) series only (B) parallel only  
 (C) series-parallel (D) series or parallel

134.



Two lamps, Green (G) and Red (R) are connected in a motor circuit as shown in the figure. The conditions under which the lamps will burn are, (supply is available at terminals A & B)

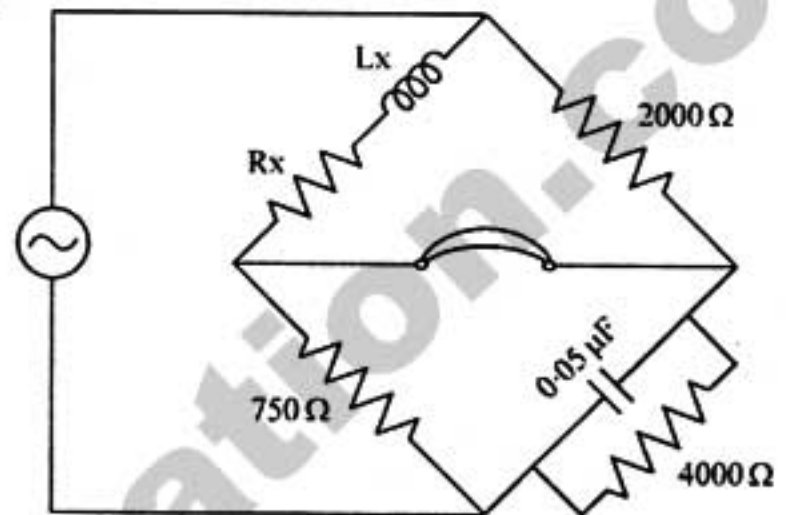
- (A) Green lamp burns always, red lamp burns only when switch S is closed  
 (B) Green and red lamp burns when switch S is closed  
 (C) Green lamp will not burn always, red lamp burns only when switch S is closed  
 (D) Green lamp burns only when S is open and red lamp burns only when S is closed.

SPACE FOR ROUGH WORK

135. If in an RLC series circuit, the frequency is below the resonant frequency, then  
 (A)  $X_C = X_L$  (B)  $X_C < X_L$   
 (C)  $X_C > X_L$  (D) None of the above
136. An RLC series circuit has  $R=10\Omega$ ,  $L=2\text{ H}$ . What value of capacitance will make the circuit critically damped?  
 (A)  $0.02\text{ F}$  (B)  $0.08\text{ F}$   
 (C)  $0.2\text{ F}$  (D)  $0.4\text{ F}$
137. When a series RL circuit is connected to a voltage source  $V$  at  $t=0$ , the current passing through the inductor  $L$  at  $t=0^+$  is  
 (A)  $\frac{V}{R}$  (B) infinite  
 (C) zero (D)  $\frac{V}{L}$
138. Three wattmeter method of power measurement can be used to measure power in  
 (A) Balanced circuits  
 (B) Unbalanced circuits  
 (C) Both balanced and unbalanced circuits  
 (D) None of the above
139. In a three phase system, the volt ampere rating is given by  
 (A)  $3 V_L I_L$  (B)  $\sqrt{3} V_L I_L$   
 (C)  $V_L I_L$  (D)  $V_{ph} I_{ph}$
140. In a parallel RLC circuit if the lower cut-off frequency is  $2400\text{ Hz}$  and the upper cut-off frequency is  $2800\text{ Hz}$  what is the bandwidth?  
 (A)  $400\text{ Hz}$  (B)  $2400\text{ Hz}$   
 (C)  $2800\text{ Hz}$  (D)  $5200\text{ Hz}$
141. The errors in current transformers can be reduced by designing them with  
 (A) high permeability and low loss core materials, avoiding any joints in the core and also keeping the flux density to a low value  
 (B) using primary and secondary windings as close to each other as possible  
 (C) using large cross-section for both primary and secondary winding conductors  
 (D) All of these

142. A CRO screen has ten divisions on the horizontal scale. If a voltage signal  $5 \sin(314t + 45^\circ)$  is examined with a line base setting of  $5\text{ msec/div}$ , the number of cycle of signal displayed on the screen will be  
 (A) 0.5 cycle (B) 2.5 cycles  
 (C) 5 cycles (D) 10 cycles

143.



In the Maxwell bridge as shown in the figure the values of resistance  $R_x$  and inductance  $L_x$  of a coil are to be calculated after balancing the bridge. The component values are shown in the figure at balance. The values of  $R_x$  and  $L_x$  will respectively be

- (A)  $375\text{ ohm}$ ,  $75\text{ mH}$   
 (B)  $75\text{ ohm}$ ,  $150\text{ mH}$   
 (C)  $37.5\text{ ohm}$ ,  $75\text{ mH}$   
 (D)  $75\text{ ohm}$ ,  $75\text{ mH}$
144. Creeping in a single phase induction type energy meter may be due to  
 (A) over compensation for friction  
 (B) over voltage  
 (C) vibrations  
 (D) All of these
145. Which instrument is used to measure the high resistance?  
 (A) Kelvin's Double bridge  
 (B) Wheatstone bridge  
 (C) Carey-Foster bridge  
 (D) Megger

SPACE FOR ROUGH WORK

146. Modern electronic multimeters measure resistance by  
 (A) using a bridge circuit  
 (B) using an electronic bridge compensator for nulling  
 (C) forcing a constant current and measuring the voltage across the unknown resistance  
 (D) using an electrical bridge circuit
147. If a dynamometer type wattmeter is connected in an ac circuit, the power indicated by the wattmeter will be  
 (A) Volt ampere product  
 (B) Average power  
 (C) Peak power  
 (D) Instantaneous power
148. A 150 V moving iron voltmeter of accuracy class 1.0 reads 75 V when used in a circuit under standard conditions. The maximum possible percentage error in the reading is  
 (A) 0.5 (B) 1.0  
 (C) 2.0 (D) 4.0
149. A dc voltmeter has a sensitivity of  $1000 \Omega/\text{volt}$ . When it measures half full scale in 100 V range, the current through the voltmeter will be  
 (A) 100 mA (B) 50 mA  
 (C) 1 mA (D) 0.5 mA
150. A Lissajous pattern on an oscilloscope has 5 horizontal tangencies and 2 vertical tangencies. The frequency of the horizontal input is 100 Hz. The frequency of the vertical input will be  
 (A) 400 Hz  (B) 2500 Hz  
 (C) 4000 Hz (D) 5000 Hz
151. The no load input power to a transformer is practically equal to \_\_\_\_\_ loss in the transformer.  
 (A) Iron (B) Copper  
 (C) Eddy current (D) Windage
152. The primary and secondary windings of a transformer are wound on the top of each other in order to reduce  
 (A) iron losses  
 (B) copper losses  
 (C) leakage reactance  
 (D) winding resistance
153. Leakage flux in a transformer occurs because  
 (A) iron core has high permeability  
 (B) air is not a good magnetic insulator  
 (C) applied voltage is sinusoidal  
 (D) transformer is not an efficient device
154. The no load primary current  $I_0$ , is about \_\_\_\_\_ of full load primary current of a transformer.  
 (A) 3 – 5% (B) 15 – 30%  
 (C) 30 – 40% (D) Above 40%
155. Which of the following Braking is not suitable for motors?  
 (A) Dynamic braking  
 (B) Plugging  
 (C) Regenerative braking  
 (D) Friction braking
156. An eight pole wound rotor induction motor operating on 60 Hz supply is driven at 1800 rpm by a prime mover in the opposite direction of revolving magnetic field. The frequency of rotor current is  
 (A) 60 Hz (B) 120 Hz  
 (C) 180 Hz (D) 200 Hz
157. If stator voltage of a squirrel cage induction motor is reduced to 50 per cent of its rated value, torque developed is reduced by how many percentage of its full load value?  
 (A) 50%  (B) 25%  
 (C) 75% (D) 57.7%

SPACE FOR ROUGH WORK

158. A short shunt compound generator supplies a load current of 100 A at 250 V. The generator has the following winding resistances: shunt field =  $130\ \Omega$ , armature =  $0.1\ \Omega$  and series field =  $0.1\ \Omega$ . Find the emf generated if the brush drop is 1 V per brush  
 (A) 262.0 volt (B) 262.2 volt  
 (C) 272.0 volt (D) 272.2 volt
159. As the load is increased, the speed of a dc shunt motor  
 (A) increases proportionately  
 (B) remains constant  
 (C) increases slightly  
 (D) reduces slightly
160. The  $T_a$  Vs  $I_a$  graph of a dc series motor is a  
 (A) parabola from no load to over load  
 (B) straight line throughout  
 (C) parabola throughout  
 (D) parabola up to full load and a straight line at over load
161. The purpose of starting winding in a single-phase induction motor is to  
 (A) Reduce losses  
 (B) Limit temperature rise of the machine  
 (C) Produce rotating flux in conjunction with main winding  
 (D) Increase losses
162. Which of the following motors is used in mixies?  
 (A) Repulsion motor (B) Reluctance motor  
 (C) Hysteresis motor (D) Universal motor
163. The motor used on small lathes is usually  
 (A) universal motor  
 (B) D.C. shunt motor  
 (C) single phase capacitor run motor  
 (D) 3-phase synchronous motor
164. Which of the following motors is preferred for tape-recorders?  
 (A) Shaded pole motor  
 (B) Hysteresis motor  
 (C) Two valve capacitor motor  
 (D) Universal motor
165. Locked rotor current of a shaded pole motor is  
 (A) equal to full load current  
 (B) less than full load current  
 (C) slightly more than full load current  
 (D) several times the full load current
166. Each of the following statements regarding a shaded pole motor is true *except*  
 (A) its direction of rotation is from unshaded to shaded portion of poles  
 (B) it has very poor efficiency  
 (C) it has very poor power factor  
 (D) it has high starting torque
167. Synchronous impedance method of finding voltage regulation of an alternator is called pessimistic method because  
 (A) it is simplest to perform and compute  
 (B) it gives regulation value higher than is actually found by direct loading  
 (C) armature reaction is wholly magnetising  
 (D) it gives regulation value lower than is actually found by direct loading
168. Which of the following motor is non-self starting?  
 (A) Squirrel cage induction motor  
 (B) Slip ring induction motor  
 (C) Synchronous motor  
 (D) DC series motor
169. A salient-pole synchronous motor is operating at  $\frac{1}{4}$  full-load. If its field current is suddenly switched off, it would  
 (A) stop running  
 (B) continue to run at synchronous speed  
 (C) run at sub-synchronous speed  
 (D) run at super-synchronous speed
170. A 10 pole 25 Hz alternator is directly coupled to and is driven by 60 Hz synchronous motor then the number of poles in a synchronous motor are  
 (A) 48 poles (B) 12 poles  
 (C) 24 poles (D) None of the above

SPACE FOR ROUGH WORK

171. The reactive power generated by a synchronous alternator can be controlled by  
 (A) changing the prime move input  
 (B) changing the alternator speed  
 (C) changing the field excitation  
 (D) changing the terminal voltage
172. The per phase DC armature resistance of an alternator is  $0.5\Omega$ . The effective AC armature resistance would be about  
 (A)  $0.25\Omega$  (B)  $0.5\Omega$   
 (C)  $0.75\Omega$  (D)  $1\Omega$
173. Base load of a power station stands for  
 (A) 2–4 hours/day (B) 4–8 hours/day  
 (C) 8–12 hours/day (D) 12–24 hours/day
174. If the power factor is high, then the consumer maximum KVA demand  
 (A) increases (B) decreases  
 (C) remains constant (D) becomes zero
175. A circuit breaker is rated as follows :  
 1500 A, 33 KV, 3 sec., 3-phase oil circuit breaker. Determine the making current.  
 (A) 1.5 KA (B) 35 KA  
 (C) 89 KA (D) 110 KA
176. Which of the following fault is coming under symmetrical fault ?  
 (A) LG fault (B) LL fault  
 (C) LLG fault (D) LLLG fault
177. If span length is doubled with no change in other factors, the sag of the line will become  
 (A) 0.5 time (B) 2 times  
 (C) 4 times (D) 8 times
178. An alternator is supplying a load of 300 kW at a power factor of 0.6 lagging. If the power factor is raised to unity, how many more kW can alternator supply ?  
 (A) 100 kW (B) 150 kW  
 (C) 200 kW (D) 300 kW
179. What is the maximum number of point of light, fan and socket-outlets that can be connected in one sub-circuit ?  
 (A) Four (B) Six  
 (C) Ten (D) Twelve
180. In dc operation of fluorescent tube, the life of the tube  
 (A) increases by about 80% as that with ac operation  
 (B) decreases by about 80% as that with ac operation  
 (C) remain same  
 (D) may increase or decrease
181. For painful shock, what is the range of electric shock current at 50 Hz ?  
 (A) 0–1 mA (B) 0–3 mA  
 (C) 3–5 mA (D) 5–10 mA
182. The permissible voltage drop from supply terminal to any point on the wiring system should not exceed  
 (A) 4% + 1 volt (B) 3% + 1 volt  
 (C) 2% + 1 volt (D) 1% + 1 volt
183. In batton wiring the cables are carried on seasoned teak wood perfectly straight and well varnished teak wood batton of thickness not less than  
 (A) 1 cm (B) 2 cm  
 (C) 3 cm (D) 4 cm
184. For cleat wiring and 250 volts supply, the cables will be placed \_\_\_\_\_ apart centre to centre for single core cables  
 (A) 2.5 cm (B) 3 cm  
 (C) 4 cm (D) 4.5 cm
185. The aluminium conductor of size \_\_\_\_\_ is used for a subcircuit in domestic wiring.  
 (A) 1/1.2 mm (B) 1/1.4 mm  
 (C) 1/1.8 mm (D) 1/2.24 mm

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186. The minimum area of cross-section of a three and half core cable should be  
 (A) 30 cm<sup>2</sup> (B) 40 cm<sup>2</sup>  
 (C) 50 cm<sup>2</sup> (D) 60 cm<sup>2</sup>
187. The acceptable value of grounding resistance for domestic applications is  
 (A) 0.5 Ω (B) 1 Ω  
 (C) 1.5 Ω (D) 2 Ω
188. Humans are more vulnerable to electric shock current at  
 (A) 40 Hz (B) 45 Hz  
 (C) 48 Hz (D) 50 Hz
189. A 200 V lamp takes a current of 1 A, it produces a total flux of 2,860 lumens. The efficiency of the lamp is  
 (A) 9.9 lumens/W (B) 8.9 lumens/W  
 (C) 10.9 lumens/W (D) 14.3 lumens/W
190. The unit of luminous flux is  
 (A) steradian (B) candela  
 (C) lumen (D) lux
191. An electric heater draws 3.5 A from a 110 V source. The resistance of the heating element is approximately  
 (A) 385 Ω (B) 38.5 Ω  
 (C) 3.1 Ω (D) 31 Ω
192. During the resistance welding, the heat produced at the joint is proportional to  
 (A)  $I^2R$  (B) Voltage  
 (C) Current (D) Volt-Ampere
193. An arc blow is a welding defect that is countered with the help of carrying  
 (A) the arc welding using AC supply  
 (B) the thermit welding  
 (C) the arc welding using DC supply  
 (D) the resistance welding
194. The electric drives possess the following drawback  
 (A) not available with various rating  
 (B) requires a continuous power supply  
 (C) requires hazardous fuel requirement  
 (D) not adoptable to various environments
195. An amplifier has a gain of 10,000 expressed in decibels the gain is  
 (A) 10 (B) 40  (C) 80 (D) 100
196. Silicon has a preference in IC technology because  
 (A) it is an indirect semiconductor  
 (B) it is a covalent semiconductor  
 (C) it is an elemental semiconductor  
 (D) of the availability of nature oxide SiO<sub>2</sub>
197. To operate properly, a transistor's base-emitter junction must be forward biased with reverse bias applied to which junction?  
 (A) Collector-emitter  (B) Base-collector  
 (C) Base-emitter (D) Collector-base
198. With the positive probe on an NPN base, an ohmmeter reading between the other transistor terminals should be  
 (A) Open (B) Infinite  
 (C) Low resistance (D) High resistance
199. In Bipolar Junction transistors, the type of configuration which will give both voltage gain and current gain is  
 (A) CC (B) CB  
 (C) CE (D) None
200. To prepare a P type semiconducting material the impurities to be added to silicon are  
 (A) Boron, Gallium  
 (B) Arsenic, Antimony  
 (C) Gallium, Phosphorous  
 (D) Gallium, Arsenic

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