

**SECTION-A**  
**GENERAL AWARENESS**

1. From time to time, which among the following organizations publishes "Progress of the World's Women" report?  
A. United Nations  
B. World Bank  
C. UNICEF  
D. WTO
2. Who has been awarded with Outstanding Service Award for his service in Singapore?  
A. Anil Singhvi  
B. Gopinath Pillai  
C. Ranjit Chaudhari  
D. Shiva Nayar
3. Who was honoured with Raj Kapoor Life Time Contribution award by Maharashtra government?  
A. Vidya Balan  
B. Katrina Kaif  
C. Shashikala  
D. Sonali Kulkarni
4. VARUNA is a naval combat exercise between India and which country ?  
A. USA  
B. France  
C. China  
D. UK
5. Who was awarded with the prestigious Master Deenanath Mangeshkar Award 2015?  
A. Anil Kapoor  
B. Sunil Shetty  
C. Amitabh Bachchan  
D. Amir Khan
6. The headquarter of the Coffee Board of India is  
A. Mysore  
B. Kolkata  
C. Bengaluru  
D. Cochin
7. Which state has maximum certified area under organic farming?  
A. Rajasthan  
B. Madhya Pradesh  
C. Maharashtra  
D. Sikkim
8. India and which country finalised a draft pact on coastal shipping, recently?  
A. Sri Lanka  
B. Bangladesh  
C. Pakistan  
D. Bhutan
9. Which movie has won maximum awards at the International Indian Film Awards?  
A. Queen  
B. EK Villain  
C. Haider  
D. PK
10. Which state has been awarded best Panchayat state in 2015 on National Panchayati Raj Diwas?  
A. Karnataka  
B. Kerala  
C. Assam  
D. Rajasthan

- 11.** To which Japanese automobile company, India has become the top global market both in terms of volumes as well as revenues?
- A. Yamaha  
B. Honda  
C. Suzuki  
D. Toyota
- 12.** Recently, India has delivered three Cheetal military choppers to which neighboring country?
- A. Pakistan  
B. Bangladesh  
C. Afghanistan  
D. Sri Lanka
- 13.** Which among the following industries generates invisible exports?
- A. Handicraft  
B. Jewelry  
C. Travel and Tourism  
D. Fishing
- 14.** Which among of the following missiles is called the Indian Patriot?
- A. Nag  
B. Sagarika  
C. Trishul  
D. Akash
- 15.** Which country in SAARC has the highest GDP (PPP) per capita as per World Economic Outlook Database, April 2015?
- A. Sri Lanka  
B. Maldives  
C. India  
D. Bhutan
- 16.** Which of the following cities is known as Electronic City of India?
- A. Mumbai  
B. Bengaluru  
C. Hyderabad  
D. Gurgaon
- 17.** Ms Bachendri Pal had undertaken a unique expedition for focussing attention on which of the following themes?
- A. National Integration  
B. The Girl Child  
C. Spirit of Adventure  
D. One Nation One Family
- 18.** Where is the National Remote Sensing Agency situated?
- A. Bengaluru  
B. Shadnagar  
C. Chennai  
D. Mumbai
- 19.** The first underground railway in India was opened in 1984 in
- A. Mumbai  
B. Chennai  
C. Kolkata  
D. Bengaluru
- 20.** Ashok Pandit is known for his outstanding performance in which of the following?
- A. Wrestling  
B. Shooting  
C. Kabaddi  
D. Swimming

### GENERAL INTELLIGENCE AND REASONING ABILITY

Find the odd number/letters from the given alternatives.

- 21.** A. Swimming  
C. Diving
- B. Sailing  
D. Driving
- 22.** A. Discernment  
C. Penetration
- B. Perception  
D. Insinuation
- 23.** A. 5720  
C. 2640
- B. 6710  
D. 4270
- 24.** A. 626  
C. 962
- B. 841  
D. 1090
- 25.** If banana is apple, apple is grapes, grapes is mango, mango is nuts, nuts is guava, which of the following is a yellow fruit?
- A. Mango  
C. Apple
- B. Guava  
D. Nuts
- 26.** If cushion is called pillow, pillow is called mat, mat is called bedsheet and bedsheet is called cover, which will be spread on the floor?
- A. Cover  
C. Mat
- B. Bedsheet  
D. Pillow
- 27.** If wall is called window, window is called door, door is called floor, floor is called roof and roof is called ventilator. what will a person stand on?
- A. Window  
C. Floor
- B. Wall  
D. Roof
- 28.** If eraser is called box, box is called pencil, pencil is called sharpener and sharpener is called bag, what will a child write with?
- A. Eraser  
C. Pencil
- B. Box  
D. Sharpener
- 29.** 4, 7, 12, 19, 28, ?
- A. 49  
C. 30
- B. 36  
D. 39
- 30.** 6, 11, 21, 36, 56, ?
- A. 91  
C. 81
- B. 51  
D. 42
- 31.** 10, 100, 200, 310, ?
- A. 430  
C. 410
- B. 420  
D. 400

- 32.** 8, 28, 116, 584, ?
- A. 1752  
B. 3504  
C. 3508  
D. 3502
- 33.** Find the odd one out
- A. Sheep : bleat  
B. Horse : neigh  
C. Ass : grunt  
D. Owl : hoot
- 34.** Find the odd one out
- A. Door : Bang  
B. Piano : Play  
C. Drum : Beat  
D. Rain : Platter
- 35.** Find the odd one out
- A. Ammeter : Current  
B. Hygrometer : Pressure  
C. Odometer : Speed  
D. Seismograph : Earthquakes
- 36.** Find the odd one out
- A. Aphid : Paper  
B. Moth : Wool  
C. Termite : Wood  
D. Locust : Plant
- 37.** While travelling in a train, you found that some college students pulling the alarm chain simply to get down at their desired point, you would (Select the most appropriate alternative as the answer)
- A. With the help of other passengers check them from do  
B. Let them pull the chain but check them from detrain  
C. Inform the guard of the train as soon as it stops  
D. Keep quiet and do nothing
- 38.** While going on a scooter, you find someone has been hurt by your vehicle, you would (Select the most appropriate alternative as the answer)
- A. Try to run away from the spot immediately  
B. Stop your vehicle and say 'I am sorry'  
C. Take him to doctor and arrange for his medical aid  
D. Pay compensation for the injury and in this way
- 39.** Your maid has invited you to her daughter's wedding. You would (Select the most appropriate alternative as the answer)
- A. Completely ignore her  
B. Attend the wedding  
C. Buy a gift for her daughter and help in wedding  
D. Congratulate her and make up some excuse for not be there

- 40.** You are alone in the house and your sister-in-law is suddenly experiencing labour pains. You would (Select the most appropriate alternative as the answer)
- A. Get upset and do not know what is the right step
  - B. Go out of the house to call your family doctor
  - C. Take her to the nearest hospital
  - D. Call an ambulance for emergency

**ARITHMETICAL AND NUMERICAL ABILITY**

- 41.**  $3 + 33 + 333 + 3.33 = ?$
- A. 362.3
  - B. 372.33
  - C. 702.33
  - D. 702
- 42.** The least perfect square, which is divisible by each of 21, 36 and 66 is
- A. 213444
  - B. 214344
  - C. 214434
  - D. 231444
- 43.** A lent Rs. 5,000 to B for 2 years and Rs 3,000 to C for 4 years on simple interest at the same rate of interest and received Ps 2,200 in all from both of them as interest. The rate of interest per annum is
- A. 9%
  - B. 10%
  - C. 11%
  - D. 12%
- 44.** Find the simple interest on Rs. 7,000 at  $50/3\%$  for 9 months.
- A. Rs. 1,075
  - B. Rs. 975
  - C. Rs. 875
  - D. Rs. 775
- 45.** Find the simple interest on the Rs, 2,000 at  $25/4\%$  per annum for the period from 4<sup>th</sup> Feb. 2005 to 18<sup>th</sup> April 2005.
- A. Rs. 25
  - B. Rs. 30
  - C. Rs. 35
  - D. Rs. 40
- 46.** Sachin borrows Rs. 5,000 for 2 years at 4% p.a. simple interest. He immediately lends money to Rahul at  $25/4\%$  p.a. for 2 years. Find the gain of one year by Sachin.
- A. 110.50
  - B. 111.50
  - C. 112.50
  - D. 113.50
- 47.** Eighteen years ago, a father was three times as old as his son. Now the father is only twice as old as his son. Then the sum of the present ages of the son and the father is
- A. 102
  - B. 76
  - C. 105
  - D. 108

48. A person's present age is two-fifth of the age of his mother. After 8 years, he will be one-half of the age of his mother. How old is the mother at present?
- A. 44 years  
B. 42 years  
C. 40 years  
D. 55 years
49. Tanya's grandfather was 8 times older to her 16 years ago. He would be 3 times of her age 8 years from now. Eight years ago, what was the ratio of Tanya's age to that of her grandfather?
- A. 16 : 11  
B. 11 : 53  
C. 17 : 30  
D. None of these
50. Four years ago, the father's age was three times the age of his son. The total of the ages of the father and the son after four years, will be 64 years, What is the father's age at present?
- A. 35 years  
B. 36 years  
C. 46 years  
D. None of these
51. How many 3-digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9, which are divisible by 5 and none of the digits is repeated?
- A. 5  
B. 10  
C. 15  
D. 20
52. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?
- A. 159  
B. 194  
C. 205  
D. 209
53. In how many ways a committee, consisting of 5 men and 6 women can be formed from 8 men and 10 women?
- A. 266  
B. 5040  
C. 11760  
D. 86400
54. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?
- A. 32  
B. 48  
C. 64  
D. 96
55. One side of rectangular field is 15 meters and one of its diagonals is 17 meters. Then find the area of the field
- A. 120 m<sup>2</sup>  
B. 130 m<sup>2</sup>  
C. 140 m<sup>2</sup>  
D. 150 m<sup>2</sup>

- 56.** The ratio between the length and the breadth of a rectangular park is 3 : 2. If a man cycling along the boundary of the park at the speed of 12 km/hr completes one round in 8 minutes, then the area of the park (in sq. m) is  
A. 152600 m  
B. 153500 m<sup>2</sup>  
C. 153600 m<sup>2</sup>  
D. 153800 m<sup>2</sup>
- 57.** The percentage increase in the area of a rectangle, if each of its sides is increased by 20 % is  
A. 32 %  
B. 34 %  
C. 42 %  
D. 44 %
- 58.** The area of a rectangle is 460 square metres. If the length is 15% more than the breadth, what is the breadth of the rectangular field?  
A. 18 meters  
B. 20 meters  
C. 22 meters  
D. 25 meters
- 59.** Two dice are thrown simultaneously. The probability of getting the sum 2 or 8 or 12 is  
A. 5/18  
B. 7/18  
C. 7/36  
D. 5/36
- 60.** If two balanced dice are tossed once, the probability of the event, that the sum of the integers coming on the upper sides of the two dice is 9, is  
A. 7/18  
B. 1/9  
C. 5/36  
D. 1/6

**TEST OF LANGUAGE : HINDI**

उक्त पद्यांश के आधार पर निम्नलिखित प्रश्नों के उत्तर दीजिए।

स्वप्न आता स्वर्ग का, दृग कोरकों में दीप्ति आती।

पंख लग जाते पगों को, ललकती उन्मुक्त छाती।

रास्ते का एक कांटा, पाँव का दिल चीर देता।

रक्त की दो बूँद गिरती, एक दुनिया डूब जाती।

आँख में हो स्वर्ग लेकिन, पाँव पृथ्वी पर टिके हों।

- 61.** पद्यांश का उचित शीर्षक है  
A. स्वर्ग का स्वप्न  
B. पाँव का दिल  
C. पृथ्वी पर पाँव  
D. पूर्व चलने के बटोही

62. 'पाँव पृथ्वी पर टिके हों' से आशय है
- A. यथार्थ के धरातल पर रहे  
B. पृथ्वी की उपेक्षा न करें  
C. दूढ़-संकल्प से कार्य करें  
D. उपर्युक्त में से कोई नहीं
63. पद्य में निहित सन्देश है
- A. कल्पना की उड़ान भरें  
B. यथार्थ को आधार बनायें  
C. कल्पना और वास्तविकता में सन्तुलन की आवश्यकता है  
D. स्वर्ग व पृथ्वी में दूरी न हो
64. "रास्ते का एक काँटा" - इस पंक्ति में काँटा प्रतीक है
- A. गरीबी का  
B. बाधा का  
C. दुख का  
D. मार्ग के सौन्दर्य का
65. 'स्वप्न आता स्वर्ग का' - इस पंक्ति का निहितार्थ है
- A. कल्पनाओं को संजोना  
B. दिवास्वप्न देखना  
C. स्वर्ग की इच्छा रखना  
D. महान् कल्पना
66. 'ठाकुर सुहाती कहना'- इस मुहावरे का अर्थ बताइए
- A. खुशामद करना  
B. बराबरी करना  
C. अच्छी बातें करना  
D. बुराई करना
67. अमर का विलोम शब्द है
- A. मृत्यु  
B. मृत्यु  
C. अजर  
D. उत्तल
68. आहूत का विलोम शब्द है
- A. बाहूत  
B. अनाहूत  
C. वृहूत  
D. उपरोक्त में से कोई नहीं
69. उग्र का विलोम शब्द है
- A. अनिष्ट  
B. सौम्य  
C. अवनत  
D. गुस्सैल



70. कोप का विलोम शब्द है
- A. क्रोध  
B. क्षमा  
C. कृपा  
D. निष्ठुर
71. व्याकरण शुद्ध वाक्य चुनकर लिखिए
- A. तुम क्या करता है?  
B. तुम क्या करते हो?  
C. तुम क्या करते है  
D. तुम क्या करते हूँ
72. तहस नहस हो जाना इसका सही अर्थ है
- A. बढ़ जाना  
B. यथावत रहना  
C. कम होना  
D. नष्ट होना
73. \_\_\_\_\_ फल खाता है। यहाँ का सही सर्वनाम शब्द है
- A. आप  
B. तुम  
C. वह  
D. मैं
74. 'उतर गयी लोई क्या करेगा कोई' - इस मुहावरे का अर्थ बताइए
- A. बेइज्जती होना  
B. इत्त जाने पर डर कैसा  
C. इज्जत बढ़ना  
D. बेइज्जती से डर लगना
75. खेलनेवाले को कहते हैं
- A. खिलाड़ी  
B. खिलाड़ी  
C. लड़ाकू  
D. किलाड़ी
76. 'सम्मान' इसका समानार्थक शब्द है
- A. समान  
B. सामान  
C. बेइज्जत  
D. इज्जत
77. यह \_\_\_\_\_ बहन है। यहाँ का सही विशेषण है
- A. मेरा  
B. मेरे  
C. मेरी  
D. हमारा
78. उपस्थित शब्द का विरुद्ध पद है
- A. हाजर  
B. गेरहाजरी  
C. अनुपस्थित  
D. अनूपस्थिति

79. भाव + अर्थ = भावार्थ, इसमें कौनसी संधि है ?
- A. दीर्घ स्वर संधि  
B. गुण संधि  
C. यणु स्वर संधि  
D. अयादि स्वर संधि
80. एक + एक = एकैक, इसमें कौन-सी संधि है ?
- A. दीर्घ स्वर संधि  
B. वृद्धि स्वर संधि  
C. यणु स्वर संधि  
D. अयादि स्वर संधि

### TEST OF LANGUAGE: ENGLISH

**Direction: 81-85:** On the surface, the conquest of the Aztec empire by Herman Cortes is one of the most amazing military accomplishments in history. With a small fighting force numbering in the hundreds, Cortes led the Spanish explorers into victory against an Aztec population that many believe topped 21 million. In light of such a seemingly impossible victory, the obvious question is: how did a small group of foreign fighters manage to topple one of the world's strongest, wealthiest and most successful military empires?

Several factors led to Cortes success. First, the Spanish exploited animosity toward the Aztecs among rival groups and convinced thousands of locals to fight. In one account of a battle, it is recorded that at least 200,000 natives fought with Cortes. Next, the Spanish possessed superior military equipment in the form of European cannons, guns, and crossbows, leading to effective and efficient disposal of Aztec defenses. For example, Spanish cannons quickly defeated large Aztec walls that had protected the empire against big and less technically advanced armies.

Despite the Spanish advantages, the Aztecs probably could have succeeded in defending their capital city of Tenochtitlan had they leveraged their incredible population base to increase their army's size and ensured that no rogue cities would ally with Cortes. In order to accomplish this later goal, Aztec leader Motecuhzoma needed to send envoys to neighboring cities telling their inhabitants about the horrors of Spanish conquest and the inevitability of Spanish betrayal.

In addition, the Aztecs should have exploited the fact that the battle was taking place on their territory. No reason existed for the Aztecs to consent to a conventional battle, which heavily favored the Spanish. Motecuhzoma's forces should have thought outside the box and allowed Cortes into the city, only to subsequently use hundreds of thousands of fighters to prevent escape and proceed in surprise "door-to-door"

combat. With this type of battle, the Aztecs would have largely thwarted Spanish technological supremacy. However, in the end, the superior weaponry of the Spanish, the pent-up resentment of Aztec rivals, the failure of Aztec diplomacy and the lack of an unconventional Aztec war plan led to one of the most surprising military outcomes in the past one thousand years.

- 81.** Which of the following best characterizes the main point the author is trying to convey in the passage?
- A. Aztec failure to fight an unconventional war led to an unnecessary defeat
  - B. Spanish victory was neither as impressive nor as surprising as it may first appear
  - C. Hernan Cortes masterminded an amazing military accomplishment
  - D. The myopic vision of the Aztecs led to their unnecessary downfall
- 82.** The passage is sequentially organized in which of the following Ways?
- A. Define a problem; explain the sources of the problem; offer a solution to the problem
  - B. Pose a question; offer an answer to the question; offer an alternative answer to the question
  - C. Introduce a mystery; offer an explanation for the mystery; provide an alternative explanation for the mystery
  - D. Introduce an enigma; explain the reasons for the enigma; discuss the inevitability of the enigma
- 83.** According to the passage, all of the following led to Cortes success except
- A. Advanced crossbows
  - B. Local Spanish allies
  - C. Nimble military force
  - D. Local tribal friction
- 84.** The author implies which of the following about the nature of Aztec regional influence and power?
- A. Achieved with a non-traditional military campaign
  - B. Engendered some anger
  - C. Achieved through alliances
  - D. Based upon small yet swift and brutal military force
- 85.** The author's tone can best be described as
- A. Analytical
  - B. Anger
  - C. Frustrated
  - D. Optimistic

- 86.** Find the error.  
A. He will/ B. ring him/ C. tomorrow/D. in the afternoon.  
A. A. B. B.  
C. C. D. D.
- 87.** Which of the following sentence has error?  
A. No error B. All the information that you want  
C. In this book D. You can get
- 88.** The Hubble Space Telescope will search for planets around the stars, a key to the extra-terrestrial life, and examine interstellar dust and gases out of which stars are born.  
A. Perception B. Discovery  
C. Enquiry D. Quest
- 89.** Order the sentence:-  
S1: Hungary, with a population of about 10 million, lies between Czechoslovakia to the North and Yugoslavia to the South.  
P: Here a great deal of grain is grown.  
Q: In recent years, however, progress has been made also in the field of industrialization.  
R: Most of this country consists of an extremely fertile plain, through which the river Danube flows.  
S: In addition to grain, the plain produces potatoes, sugar, wine and livestock.  
S6: The new industries derive mainly from agricultural production.  
The Proper sequence should be  
A. RPSQ B. QRSP  
C. PRSQ D. ROSP
- 90.** Synonyms of Imminent  
A. Impure B. Unsteady  
C. Proud D. Upcoming

Some parts of the sentences in the passage below are left blank. Fill them with the best alternative.

**Directions 91-93:-** According to a survey conducted in the US, a 'geek dad' is a father who is\_\_\_\_(91) about technology and knowledgeable about the latest\_\_\_\_(92) Interestingly, an increasing number of parents, especially fathers are turning tech savvy to\_\_\_\_(93) with their children.

91. A. Aware  
C. Enthusiastic
92. A. Innovations  
C. Gadgets
93. A. Gel  
C. Bond
- B. Interested  
D. Well read.
- B. Developments  
D. Games
- B. Play  
D. Enjoy

**Directions 94 and 95:** In the following question four alternatives are given for the idiom/phrase *Italicized* and underlined in the sentence. Choose the alternative which best expresses the meaning of the idiom/phrase.

94. This matter has been *hanging fire* for the last many months and must therefore be decided one way or the other.  
A. going on slowly  
C. stuck up
- B. hotly debated  
D. ignored
95. In the armed forces, it is considered a great privilege to *die in harness*.  
A. die on a horse back  
C. die while still working
- B. die in the battlefield  
D. die with honour
96. Antonymous of Obey  
A. Attract  
C. Repel
- B. Disobey  
D. Diffuse
97. You can play with these kittens quiet safely  
A. These kittens can played with quiet safely  
B. These kittens can play with you quiet safely  
C. These kittens can be played with you quiet safely  
D. These kittens can be played with quiet safely
98. Find the wrong spelt word  
A. Passion  
C. Ration
- B. Fashion  
D. Tuition
99. Today Wegener's theory is \_\_\_\_\_; however, he died an outsider treated with \_\_\_\_\_ by the scientific establishment.  
A. unsupported-approval  
C. accepted-approration
- B. dismissed-contempt  
D. unchallenged - disdain
100. The revolution in art has not lost its steam; it \_\_\_\_\_ on as fiercely as ever.  
A. trudges  
C. edge
- B. meanders  
D. rages

**SECTION-B**

**POST SPECIFIC SUBJECT-RELATED QUESTIONS**

- 101.** The property of a conductor due to which it passes current is called
- A. Resistance  
B. Reluctance  
C. Conductance  
D. Inductance
- 102.** The resistance of a conductor varies inversely as
- A. length  
B. area of cross-section  
C. temperature  
D. resistivity
- 103.** With rise in temperature the resistance of pure metals
- A. increases  
B. decreases  
C. first increases and then decreases  
D. remains constant
- 104.** Three resistances of 10 Ohms, 15 Ohms and 30 Ohms are connected in parallel. The total resistance of the combination is
- A. 5 ohms  
B. 10 ohms  
C. 15 ohms  
D. 55 ohms
- 105.** An instrument which detects electric current is known as
- A. voltmeter  
B. rheostat  
C. wattmeter  
D. galvanometer
- 106.** In a circuit a 33 Ohm resistor carries a current of 2 A. The voltage across the resistor is
- A. 33 V  
B. 66 V  
C. 80 V  
D. 132 V
- 107.** A light bulb draws 300 mA when the voltage across it is 240 V. The resistance of the light bulb is
- A. 400 Ohms  
B. 600 Ohms  
C. 800 Ohms  
D. 1000 Ohms
- 108.** A current of 16 amperes divides between two branches in parallel of resistances 8 Ohms and 12 Ohms respectively. The current in each branch is
- A. 6.4A, 6.9A  
B. 6.4A, 9.6A  
C. 4.6A, 6.9A  
D. 4.6A, 9.6A
- 109.** Two resistors are said to be connected in series when
- A. same current passes in turn through both  
B. both carry the same value of current  
C. total current equals the sum of branch currents  
D. sum of IR drops equals the applied e.m.f.

- 110.** Which of the following statements is true both for a series and a parallel D.C. circuit?
- A. Elements have individual currents
  - B. Currents are additive
  - C. Voltages are additive
  - D. Powers are additive
- 111.** Kirchhoff's current law states that
- A. net current flow at the junction is positive
  - B. Algebraic sum of the currents meeting at the junction is zero
  - C. no current can leave the junction without some current entering it.
  - D. total sum of currents meeting at the junction is zero
- 112.** According to Kirchhoff's voltage law, the algebraic sum of all IR drops and e.m.f.s in any closed loop of a network is always
- A. negative
  - B. positive
  - C. determined by battery e.m.f.s
  - D. zero
- 113.** Kirchhoff's current law is applicable to only
- A. junction in a network
  - B. closed loops in a network
  - C. electric circuits
  - D. electronic circuits
- 114.** Kirchhoff's voltage law is related to
- A. junction currents
  - B. battery e.m.f.s
  - C. IR drops
  - D. both B. and C.
- 115.** For maximum transfer of power, internal resistance of the source should be
- A. equal to load resistance
  - B. less than the load resistance
  - C. greater than the load resistance
  - D. none of the above
- 116.** If the energy is supplied from a source, whose resistance is 1 Ohm, to a load of 100 Ohms the source will be
- A. a voltage source
  - B. a current source
  - C. both of above
  - D. none of the above
- 117.** The circuit whose properties are same in either direction is known as
- A. unilateral circuit
  - B. bilateral circuit
  - C. irreversible circuit
  - D. reversible circuit
- 118.** While calculating  $R_{th}$  in Thevenin's theorem and Norton equivalent
- A. all independent sources are made dead
  - B. only current sources are made dead
  - C. only voltage sources are made dead
  - D. all voltage and current sources are made dead

- 119.** The number of independent equations to solve a network is equal to
- A. the number of chords
  - B. the number of branches
  - C. sum of the number of branches and chords
  - D. sum of number of branches, chords and nodes
- 120.** The superposition theorem requires as many circuits to be solved as there are
- A. sources, nodes and meshes
  - B. sources and nodes
  - C. sources
  - D. nodes
- 121.** Laminations of core are generally made of
- A. case iron
  - B. carbon
  - C. silicon steel
  - D. stainless steel
- 122.** Which of the following could be lamina-approximately the thickness of laminations of a D.C. machine?
- A. 0.005 mm
  - B. 0.05 mm
  - C. 0.5 m
  - D. 5 m
- 123.** The bearings used to support the rotor shafts are generally
- A. ball bearings
  - B. bush bearings
  - C. magnetic bearings
  - D. needle bearings
- 124.** In D.C. generators, the cause of rapid brush wear may be
- A. severe sparking
  - B. rough commutator surface
  - C. imperfect contact
  - D. any of the above
- 125.** In lap winding, the number of brushes is always
- A. double the number of poles
  - B. same as the number of poles
  - C. half the number of poles
  - D. two
- 126.** For a D.C. generator when the number of poles and the number of armature conductors is fixed, then which winding will give the higher e.m.f.?
- A. Lap winding
  - B. Wave winding
  - C. Both A. and B.
  - D. Depends on other features: of design
- 127.** In a four-pole D.C. machine
- A. all the four poles are North poles
  - B. alternate poles are North and South
  - C. all the four poles are South poles
  - D. two North poles follow two South poles



- 128.** Copper brushes in D.C. machine are used
- A. where low voltage and high currents are involved
  - B. where high voltage and small currents are involved
  - C. in both of the above cases
  - D. in none of the above cases
- 129.** A separately excited generator as compared to a self-excited generator
- A. is amenable to better voltage control
  - B. is more stable
  - C. has exciting current independent of load current
  - D. has all above features
- 130.** Iron losses in a D.C. machine are independent of variations in
- A. speed
  - B. load
  - C. voltage
  - D. speed and voltage
- 131.** In D.C. generators, current to the external circuit from armature is given through
- A. commutator
  - B. solid connection
  - C. slip rings
  - D. none of the above
- 132.** Brushes of D.C. machines are made of
- A. carbon
  - B. soft copper
  - C. hard copper
  - D. all of the above
- 133.** If  $B$  is the flux density,  $l$  the length of conductor and  $v$  the velocity of conductor, then induced e.m.f. is given by
- A.  $BIV$
  - B.  $Blv/2$
  - C.  $Bl/2v$
  - D.  $2B/lv$
- 134.** The material for commutator brushes is generally
- A. mica
  - B. copper
  - C. cast iron
  - D. carbon
- 135.** The insulating material used between the commutator segments is normally
- A. graphite
  - B. paper
  - C. mica
  - D. insulating varnish
- 136.** Welding generator will have
- A. lap winding
  - B. wave winding
  - C. delta winding
  - D. duplex wave winding
- 137.** In case of D.C. machine winding, number of commutator segments
- A. number of armature coils
  - B. number of armature coil sides
  - C. number of armature conductors
  - D. number of armature turns

- 138.** For a D.C. machines laboratory following type of D.C. supply will be
- A. rotary converter
  - B. mercury arc rectifier
  - C. induction motor D.C. generator set
  - D. synchronous motor D.C. generator set
- 139.** The function of pole shoes in the case of D.C. machine is
- A. to reduce the reluctance of the magnetic path
  - B. to spread out the flux to achieve uniform flux density
  - C. to support the field coil
  - D. to discharge all the above functions
- 140.** In the case of lap winding resultant pitch is
- A. multiplication of front and back pitches
  - B. division of front pitch by back pitch
  - C. sum of front and back pitches
  - D. difference of front and back pitches
- 141.** In a D.C. generator the critical resistance can be increased by
- A. increasing its field resistance
  - B. decreasing its field resistance
  - C. increasing its speed
  - D. decreasing its speed
- 142.** The number of armature parallel paths in a two-pole D.C. generator having duplex lap winding is
- A. 2
  - B. 4
  - C. 6
  - D. 8
- 143.** For both lap and wave windings, there are as many commutator bars as the number of
- A. slots
  - B. armature conductors
  - C. winding elements
  - D. poles
- 144.** The series field of a short-shunt D.C. generator is excited by
- A. external current
  - B. armature current
  - C. shunt current
  - D. load current
- 145.** As a result of armature reaction, the reduction in the total mutual air gap flux in a D.C. generator is approximately
- A. 40 percent
  - B. 25 percent
  - C. 10 percent
  - D. 5 percent
- 146.** No-load speed of which of the following motor will be highest ?
- A. Shunt motor
  - B. Series motor
  - C. Cumulative compound motor
  - D. Differential compound motor

- 147.** The direction of rotation of a D.C. series motor can be changed by
- A. interchanging supply terminals
  - B. interchanging field terminals
  - C. Both A. and B.
  - D. None of the above
- 148.** Which of the following application requires high starting torque?
- A. Lathe machine
  - B. Centrifugal pump
  - C. Locomotive
  - D. Air blower
- 149.** If a D.C. motor is to be selected for conveyors, which motor would be preferred?
- A. Series motor
  - B. Shunt motor
  - C. Differential compound motor
  - D. Cumulative compound motor
- 150.** Which D.C. motor will be preferred for machine tools?
- A. Series motor
  - B. Shunt motor
  - C. Cumulative compound motor
  - D. Differential compound motor
- 151.** Differential compound D.C. motors can find applications requiring
- A. high starting torque
  - B. low starting torque
  - C. variable speed
  - D. frequent on-off cycles
- 152.** Which D.C. motor is preferred for elevators?
- A. Shunt motor
  - B. Series motor
  - C. Differential compound motor
  - D. Cumulative compound motor
- 153.** As the load is increased the speed of D.C. shunt motor will
- A. reduce slightly
  - B. increase slightly
  - C. increase proportionately
  - D. remains unchanged
- 154.** The armature torque of the D.C. shunt motor is proportional to
- A. field flux only
  - B. armature current only
  - C. both A and B
  - D. none of the above
- 155.** Which of the following methods of speed control of D.C. machine will offer minimum efficiency ?
- A. Voltage control method
  - B. Field control method
  - C. Armature control method
  - D. All the above methods
- 156.** Which one of the following is not necessarily the advantage of D.C. motors over A.C. motors ?
- A. Low cost
  - B. Wide speed range
  - C. Stability
  - D. High starting torque

- 157.** For a D.C. shunt motor if the excitation is changed
- A. torque will remain constant
  - B. torque will change but power will remain constant
  - C. torque and power both will change
  - D. torque, power and speed, all will change
- 158.** Which motor has the poorest speed control?
- A. Differentially compounded motor
  - B. Cumulatively compounded motor
  - C. Shunt motor
  - D. Series motor
- 159.** The plugging gives the
- A. zero torque braking
  - B. smallest torque braking
  - C. highest torque braking
  - D. none of the above
- 160.** Which of the following motors one will choose to drive the rotary compressor?
- A. D.C. shunt motor
  - B. D.C. series motor
  - C. Universal motor
  - D. Synchronous motor
- 161.** If the speed of a D.C. shunt motor is increased, the back e.m.f. of the motor will
- A. increase
  - B. decrease
  - C. remain same
  - D. become zero
- 162.** Which of the following motors is most suitable for signaling devices and many kinds of timers?
- A. D.C. shunt motor
  - B. D.C. series motor
  - C. Induction motor
  - D. Reluctance motor
- 163.** Which motor should not be started on no-load?
- A. Series motor
  - B. Shunt motor
  - C. Cumulatively compounded motor
  - D. Differentially compounded motor
- 164.** Ward-Leonard control is basically a
- A. voltage control method
  - B. field divertor method
  - C. field control method
  - D. armature resistance control method
- 165.** For constant torque drive which speed control method is preferred?
- A. Field control
  - B. Armature voltage control
  - C. Shunt armature control
  - D. Mechanical loading system

- 166.** In a D.C. generator all of the following could be the effects of iron losses except
- A. Loss of efficiency
  - B. Excessive heating of core
  - C. Increase in terminal voltage
  - D. Rise in temperature of ventilating air
- 167.** The losses occurring in a D.C. generator are given below. Which loss is likely to have highest proportion at rated load of the generator?
- A. hysteresis loss
  - B. field copper loss
  - C. armature copper loss
  - D. eddy current loss
- 168.** Which of the following loss in a D.C. generator varies significantly with the load current?
- A. Field copper loss
  - B. Windage loss
  - C. Armature copper loss
  - D. None of the above
- 169.** Which of the following does not change in a transformer?
- A. Current
  - B. Voltage
  - C. Frequency
  - D. All of the above
- 170.** In a transformer the energy is conveyed from primary to secondary
- A. through cooling coil
  - B. through air
  - C. by the flux
  - D. none of the above
- 171.** A transformer core is laminated to
- A. reduce hysteresis loss
  - B. reduce eddy current losses
  - C. reduce copper losses
  - D. reduce all above losses
- 172.** The degree of mechanical vibrations produced by the laminations of a transformer depends on
- A. tightness of clamping
  - B. gauge of laminations
  - C. size of laminations
  - D. all of the above
- 173.** Star/star transformers work satisfactorily when
- A. load is unbalanced only
  - B. load is balanced only
  - C. on balanced as well as unbalanced loads
  - D. none of the above
- 174.** Delta/star transformer works satisfactorily when
- A. load is balanced only
  - B. load is unbalanced only
  - C. on balanced as well as unbalanced loads
  - D. none of the above

- 175.** The maximum efficiency of a distribution transformer is
- A. at no load
  - B. at 50% full load
  - C. at 80% full load
  - D. at full load
- 176.** Transformer breaths in when
- A. load on it increases
  - B. load on it decreases
  - C. load remains constant
  - D. none of the above
- 177.** No-load current of a transformer
- A. has high magnitude and low power factor
  - B. has high magnitude and high power factor
  - C. has small magnitude and high power factor
  - D. has small magnitude and low power factor
- 178.** The purpose of providing iron core in a step-up transformer is
- A. to provide coupling between primary and secondary
  - B. to increase the magnitude of mutual flux
  - C. to decrease the magnitude of magnetizing current
  - D. to provide all above features
- 179.** The power transformer is a constant
- A. voltage device
  - B. current device
  - C. power device
  - D. main flux device
- 180.** Two transformers operating in parallel will share the load depending upon their
- A. leakage reactance
  - B. per unit impedance
  - C. efficiencies
  - D. ratings
- 181.** Which winding of the transformer has less cross-sectional area?
- A. Primary winding
  - B. Secondary winding
  - C. Low voltage winding
  - D. High voltage winding
- 182.** Power transformers are generally designed to have maximum efficiency around
- A. no-load
  - B. half-load
  - C. near full-load
  - D. 10% overload
- 183.** Which of the following is the main advantage of an auto-transformer over a two winding transformer?
- A. Hysteresis losses are reduced
  - B. Saving in winding material
  - C. Copper losses are negligible
  - D. Eddy losses are totally eliminated
- 184.** When a given transformer is run at its rated voltage but reduced frequency, its
- A. flux density remains unaffected
  - B. iron losses are reduced
  - C. core flux density is reduced
  - D. core flux density is increased

- 185.** In an actual transformer the iron loss remains practically constant from no load to full load because
- A. value of transformation ratio remains constant
  - B. permeability of transformer core remains constant
  - C. core flux remains practically constant
  - D. primary constant
- 186.** An ideal transformer will have maximum efficiency at a load such that
- A. copper loss = iron loss
  - B. copper loss < iron loss
  - C. copper loss > iron loss
  - D. none of the above
- 187.** If the supply frequency to the transformer is increased, the iron loss will
- A. not change
  - B. decrease
  - C. increase
  - D. any of the above
- 188.** Negative voltage regulation is indicative that the load is
- A. capacitive only
  - B. inductive only
  - C. inductive or resistive
  - D. none of the above
- 189.** Iron loss of a transformer can be measured by
- A. low power factor wattmeter
  - B. unity power factor wattmeter
  - C. frequency meter
  - D. any type of wattmeter
- 190.** The transformer laminations are insulated from each other by
- A. mica strip
  - B. thin coat of varnish
  - C. paper
  - D. any of the above
- 191.** Normally, which of the following is used, when a large-scale conversion from A.C. to D.C. power is required?
- A. Motor-generator set
  - B. Motor converter
  - C. Rotary converter
  - D. Mercury arc rectifier
- 192.** A rotary converter in general construction and design, is more or less like
- A. a transformer
  - B. an induction motor
  - C. an alternator
  - D. any D.C. machine
- 193.** A rotary converter operates at a
- A. low power factor
  - B. high power factor
  - C. zero power factor
  - D. none of the above
- 194.** In which of the following equipment direct current is needed?
- A. Telephones
  - B. Relays
  - C. Time switches
  - D. All of the above

- 195.** In a rotary converter I<sup>2</sup>R losses as compared to a D.C. generator of the same size will be
- A. same  
B. less  
C. double  
D. three times
- 196.** In a mercury arc rectifier positive ions are attracted towards
- A. anode  
B. cathode  
C. shell bottom  
D. mercury pool
- 197.** By which of the following systems electric power may be transmitted?
- A. Overhead system  
B. Underground system  
C. Both A. and B  
D. None of the above
- 198.** The underground system cannot be operated above
- A. 440 V  
B. 11 kV  
C. 33 kV  
D. 66 kV
- 199.** Overhead system can be designed for operation up to
- A. 11 kV  
B. 33 kV  
C. 66 kV  
D. 400 kV
- 200.** Which of the following materials is not used for transmission and distribution of electrical power?
- A. Copper  
B. Aluminium  
C. Steel  
D. Tungsten

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