

Booklet Serial No. 11089

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

QUESTION BOOKLET

SERIES : I

Subjects : General English, General Knowledge and Electrical Engineering

Full Marks : 300

Time Allowed : 2½ Hours

Read the following instructions carefully before you begin to answer the questions.

INSTRUCTIONS TO CANDIDATES

1. This Booklet contains 150 questions to be answered in a separate OMR Answer Sheet using Black Ballpoint Pen in the following three Parts :

Part—A : General English	: 25 questions
Part—B : General Knowledge	: 25 questions
Part—C : Electrical Engineering	: 100 questions

2. All questions are compulsory.
3. You will be supplied the Answer Sheet separately by the Invigilator. You must complete the details of particulars asked for.
4. Answer must be shown by completely blackening the corresponding circle in the Answer Sheet against the relevant question number by Black Ballpoint Pen. OMR Answer Sheet without marking Series shall not be evaluated.

Example :

Suppose the following question is asked :

The Capital of Meghalaya is

- (A) Guwahati
(B) Kohima
(C) Shillong
(D) Delhi

You will have four alternatives in the Answer Sheet for your response corresponding to each question of the Question Booklet as below :

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

In the above illustration, if your chosen response is alternative (C), i.e., Shillong, then the same should be marked on the Answer Sheet by blackening the relevant circle with a Black Ballpoint Pen only as below :

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

The example shown above is the only correct method of answering.

5. 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 one question.
6. There will NOT be any negative marking for wrong answers.
7. The Answer Sheet must be handed over to the Invigilator before you leave the Examination Hall.
8. No Rough Work is to be done on the Answer Sheet. Space for Rough Work has been provided in the Question Booklet.

SEAL

PART—A : GENERAL ENGLISH

(Marks : 50)

Each question carries 2 marks

Directions (Q. Nos. 1–10) : Choose the correct answer.

1. To make something better means
(A) worsen
(B) improve
(C) destroy
(D) ignore
2. A person who studies human society is a/an
(A) biologist
(B) sociologist
(C) psychologist
(D) economist
3. To give up one's claim or right means
(A) abandon
(B) acquire
(C) retain
(D) demand
4. A person who travels to space is called
(A) pilot
(B) astronaut
(C) aviator
(D) explorer
5. A story that teaches a moral lesson is a
(A) poem
(B) fable
(C) novel
(D) drama
6. To postpone something means
(A) delay
(B) advance
(C) cancel
(D) finish
7. A person who draws maps is a
(A) geographer
(B) cartographer
(C) topographer
(D) surveyor
8. To look after someone carefully means
(A) neglect
(B) care
(C) ignore
(D) abandon
9. A person who makes furniture is a
(A) carpenter
(B) tailor
(C) mason
(D) plumber
10. To express sorrow for a mistake means
(A) apologize
(B) argue
(C) boast
(D) complain

Directions (Q. Nos. 11–15) : Choose the correct sentence(s).

11. I. He told me that he had finished his work.

II. He told me he finishes his work.

III. He told me that he will finished his work.

(A) I only

(B) I and II

(C) II only

(D) III only

12. I. She asked where I was going.

II. She asked where do I go.

III. She asked where I go.

(A) I only

(B) I and III

(C) II only

(D) III only

13. I. The teacher advised us to study hard.

II. The teacher said us study hard.

III. The teacher told study hard.

(A) I only

(B) I and II

(C) II only

(D) III only

14. I. He said that the Earth moves round the Sun.

II. He said the Earth moved round the Sun.

III. He said Earth move round Sun.

(A) I only

(B) I and II

(C) II only

(D) III only

15. I. They wanted to know whether I was coming.

II. They wanted to know whether I come.

III. They wanted to know whether I am come.

(A) I only

(B) I and III

(C) II only

(D) III only

Directions (Q. Nos. 16–20) : Choose the correct synonym.

16. Happy
(A) sad
(B) joyful
(C) angry
(D) tired
17. Begin
(A) start
(B) end
(C) stop
(D) finish
18. Tiny
(A) small
(B) huge
(C) tall
(D) wide
19. Silent
(A) noisy
(B) quiet
(C) loud
(D) talkative
20. Honest
(A) truthful
(B) cunning
(C) deceitful
(D) clever

Directions (Q. Nos. 21–23) : Choose the correct antonym.

21. Accept
(A) refuse
(B) agree
(C) permit
(D) allow
22. Strong
(A) weak
(B) firm
(C) solid
(D) tough
23. Bright
(A) dull
(B) shiny
(C) glowing
(D) clear

Directions (Q. Nos. 24 and 25) : Read the following passage and answer the questions that follow.

“Books are our best companions. They give us knowledge, wisdom and joy. Unlike friends who may leave us, books remain faithful. Reading regularly improves language skills and broadens our outlook.”

24. According to the passage, books are called ‘best companions’ because
(A) they give us money
(B) they remain faithful
(C) they are expensive
(D) they are fashionable
25. Reading books regularly helps us to
(A) improve language skills
(B) waste time
(C) forget friends
(D) become lonely

PART—B : GENERAL KNOWLEDGE

(Marks : 50)

Each question carries **2** marks

- 26.** In a parliamentary form of government, the President is
- (A) the real head
 - (B) the nominal head
 - (C) a Cabinet Minister
 - (D) the head of the government
- 27.** The feature(s) of a federal form of government is/are
- (A) written constitution
 - (B) two sets of government
 - (C) independent judiciary
 - (D) All of the above
- 28.** The Chairman of the Drafting Committee of the Constituent Assembly was
- (A) Dr. Rajendra Prasad
 - (B) Jawaharlal Nehru
 - (C) M. K. Gandhi
 - (D) Dr. B. R. Ambedkar
- 29.** For democracy to be meaningful, it should focus on which of the following factors?
- (A) Political
 - (B) Economic
 - (C) Social
 - (D) All of the above
- 30.** Which of the following serve as a guideline and yardstick for the government?
- (A) The Fundamental Rights
 - (B) The Directive Principles of State Policy
 - (C) The Fundamental Duties
 - (D) None of the above
- 31.** Shillong, which is a part of the Meghalaya Plateau, receives less rainfall than Sohra because
- (A) it lies on the leeward side
 - (B) it lies on the windward side
 - (C) the winds blowing are dry
 - (D) None of the above

32. The IST is ahead of the GMT by how many hours?

- (A) $5\frac{1}{2}$ hours
- (B) 5 hours
- (C) 4 hours
- (D) $4\frac{1}{2}$ hours

33. The lines that join places having the same atmospheric pressure are called

- (A) isobars
- (B) isotopes
- (C) isohyets
- (D) isotherms

34. Which of the following about the Earth causes day and night?

- (A) Rotation
- (B) Revolution
- (C) Tilt on its axis
- (D) Distance from the Sun

35. The Rainbow Mountain in Peru is covered in snow even during the summer at 25 °C. The reason is

- (A) it is lying near the coastal area
- (B) high altitude
- (C) high atmospheric pressure
- (D) high temperature

36. Who among the following abolished 'Sati' during the British rule in India?

- (A) Lord Dalhousie
- (B) Lord Ripon
- (C) Lord Curzon
- (D) Lord William Bentinck

37. Which of the following States in India has **not** implemented the Uniform Civil Code (UCC)?

- (A) West Bengal
- (B) Uttarakhand
- (C) Goa
- (D) Gujarat

38. Which of the following is/are correct in relation to the Right to Education?

- (A) It was introduced under the 86th Constitutional Amendment Act
- (B) It came into force in 2010
- (C) It was inserted under Article 21A
- (D) All of the above

39. With which social reformer is the Brahmo Samaj associated?

- (A) Dayananda Saraswati
- (B) Raja Ram Mohan Roy
- (C) Jyotiba Phule
- (D) Swami Vivekananda

40. The Indian National Congress, which spearheaded India's struggle for independence, was established in

- (A) 1885
- (B) 1905
- (C) 1919
- (D) 1935

41. Which of the following is/are required for the process of photosynthesis?

- (A) Sunlight and water
- (B) Carbon dioxide
- (C) Chlorophyll
- (D) All of the above

42. Which of the following are the official languages in Meghalaya?

- (A) Khasi, Garo and Hindi
- (B) Khasi, Garo and English
- (C) Khasi, English and Hindi
- (D) Garo, English and Hindi

43. Thar Desert is a hot desert. Which of the following is a cold desert?

- (A) Shimla
- (B) Darjeeling
- (C) Ladakh
- (D) Tawang

44. The process of specifically planting native trees into a forest that has decreased number of trees is
- (A) reforestation
 - (B) afforestation
 - (C) deforestation
 - (D) None of the above
45. The Westminster Model of parliamentary system of government as found in the Indian Constitution was adopted from which of the following countries?
- (A) The UK
 - (B) Canada
 - (C) Australia
 - (D) Germany
46. Who authored the book, *Heart Lamp* which won the International Booker Prize for 2025?
- (A) Arundhati Roy
 - (B) Kiran Desai
 - (C) Salman Rushdie
 - (D) Banu Mushtaq
47. Which of the following is/are correct in relation to El Niño current?
- (A) It appears off the coast of South America
 - (B) It is a warm current
 - (C) It coincides with weak monsoon in India
 - (D) All of the above
48. Goitre results due to lack of which of the following?
- (A) Protein
 - (B) Calcium
 - (C) Iodine
 - (D) None of the above
49. What unit is used for weighing gold?
- (A) pound
 - (B) hertz
 - (C) carat
 - (D) ounce
50. Which is the State Flower of Meghalaya?
- (A) Lady's Slipper Orchid
 - (B) Moth Orchid
 - (C) Cattleya Orchid
 - (D) Vanda Orchid

PART—C : ELECTRICAL ENGINEERING

(Marks : 200)

Each question carries 2 marks

51. An electric current is the
- (A) random movement of electrons in a conductor
 - (B) movement of free electrons predominantly in one direction
 - (C) pressure difference between the two poles
 - (D) power that causes drift of electrons
52. What happens to the resistance of a conductor if its length is increased three times and diameter is halved?
- (A) The resistance remains the same
 - (B) The resistance increases three times
 - (C) The resistance increases six times
 - (D) The resistance increases twelve times
53. A 12 V automobile light is rated at 30 W. The total charge that flows through the filament in one minute is
- (A) 30 C
 - (B) 12 C
 - (C) 150 C
 - (D) 180 C
54. Three parallel resistive branches are connected across a d.c. supply. What will be the ratio of the branch currents $I_1 : I_2 : I_3$, if the branch resistances are in the ratio $R_1 : R_2 : R_3 :: 2 : 4 : 6$?
- (A) 3 : 2 : 6
 - (B) 2 : 4 : 6
 - (C) 6 : 3 : 2
 - (D) 6 : 2 : 4
55. How are 500 ohms resistors connected so as to give an effective resistance of 750 ohms?
- (A) Three resistors of 500 ohms each in parallel
 - (B) Three resistors of 500 ohms each in series
 - (C) Two resistors of 500 ohms each in parallel
 - (D) Two resistors of 500 ohms each in parallel and the combination in series with another 500 ohms resistor
56. Which of the following relations is **not** correct?
- (A) $P = V / R^2$
 - (B) $P = VI$
 - (C) $I = \sqrt{P / R}$
 - (D) $V = \sqrt{PR}$

57. A network having one or more sources of e.m.f. is known as _____ network.

- (A) passive
- (B) active
- (C) linear
- (D) non-linear

58. The circuit having properties in either direction is known as _____ circuit.

- (A) bilateral
- (B) unilateral
- (C) irreversible
- (D) reversible

59. A network in which all the elements are physically separable is called

- (A) distributed network
- (B) lumped network
- (C) passive network
- (D) reactive network

60. A circuit having neither any energy source nor e.m.f. source is called _____ network.

- (A) unilateral
- (B) bilateral
- (C) passive
- (D) active

61. A dependent source

- (A) may be a current source or a voltage source
- (B) is always a voltage source
- (C) is always a current source
- (D) is neither a current source nor a voltage source

62. A switched-capacitor network is

1. time-variant sampled-data network
2. non-linear network
3. linear time-invariant network

Choose the correct option.

- (A) 1 only
- (B) 2 only
- (C) 3 only
- (D) 1 and 2 only

63. A short in any type of circuit (series, parallel, or combination) causes the total circuit

1. resistance to decrease
2. power to decrease
3. current to increase
4. voltage to decrease

Choose the correct option.

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

64. Two bulbs of 100 W/250 V and 150 W/250 V are connected in series across a supply of 250 V. The power consumed by the circuit is
- (A) 30 W
 - (B) 60 W
 - (C) 100 W
 - (D) 250 W
65. The current in a coil changes from 5 A to 1 A in 0.4 second. The induced voltage is 40 V. The self-inductance is
- (A) 1 H
 - (B) 2 H
 - (C) 4 H
 - (D) 10 H
66. Which of the following statements associated with inductors is wrong?
- (A) An inductor is a sort of short circuit to d.c.
 - (B) An inductor is a sort of open circuit to d.c.
 - (C) An ideal inductor never dissipates energy but only stores it.
 - (D) A finite amount of energy can be stored in an inductor even if the voltage across it is zero and when the current through it is constant.
67. Constant voltage source is
- (A) active and bilateral
 - (B) passive and bilateral
 - (C) active and unilateral
 - (D) passive and unilateral
68. An ideal voltage source should have
- (A) large e.m.f.
 - (B) small e.m.f.
 - (C) zero resistance
 - (D) None of the above
69. How many 200 W/220 V incandescent lamps connected in series would consume the same total power as a single 100 W/220 V incandescent lamp?
- (A) Not possible
 - (B) 4
 - (C) 3
 - (D) 2
70. Kirchhoff's laws are **not** applicable to circuits with
- (A) distributed parameters
 - (B) lumped parameters
 - (C) passive elements
 - (D) non-linear resistances

71. Superposition theorem is **not** applicable for

- (A) voltage calculation
- (B) bilateral elements
- (C) power calculation
- (D) passive elements

72. The mesh-current method

1. works with both planar and non-planar circuits
2. uses Kirchhoff's voltage law

Which of the above is/are correct?

- (A) 1 only
- (B) 2 only
- (C) Both 1 and 2
- (D) Neither 1 nor 2

73. The unit(s) of electric intensity is/are

- (A) joule/coulomb
- (B) newton/coulomb
- (C) volt/metre
- (D) Both (B) and (C)

74. In practice, the Earth is chosen as a place of zero electric potential because it

- (A) is non-conducting
- (B) is an easily available reference
- (C) keeps losing and gaining electric charge everyday
- (D) has almost constant potential

75. An ideal voltage source will charge an ideal capacitor

- (A) in infinite time
- (B) exponentially
- (C) instantaneously
- (D) None of the above

76. Magnetic current is composed of which of the following?

- (A) Only conduction component
- (B) Only displacement component
- (C) Both conduction and displacement components
- (D) Neither conduction nor displacement component

77. According to Faraday's law of electromagnetic induction, an e.m.f. is induced in a conductor whenever it

- (A) lies in a magnetic field
- (B) lies perpendicular to a magnetic field
- (C) cuts the magnetic flux
- (D) moves parallel to the direction of a magnetic field

78. Consider the following statements :

1. Fleming's rule is used where induced e.m.f. is due to flux cutting.
2. Lenz's law is used when the induced e.m.f. is due to the change of flux linkages.
3. Lenz's law is a direct consequence of the law of conservation of energy.

Which of the above statements are correct?

- (A) 1 and 2 only
- (B) 1 and 3 only
- (C) 2 and 3 only
- (D) 1, 2 and 3

79. Linkage flux per unit current is called

- (A) capacitance
- (B) resistance
- (C) inductance
- (D) capacitive reactance

80. The mutual inductance between two magnetically coupled coils depends on the

- (A) permeability of the core material
- (B) number of turns of the coils
- (C) cross-sectional area of their common core
- (D) All of the above

81. The energy stored by a coil is doubled when its current is increased by

- (A) 100 percent
- (B) 41.4 percent
- (C) 50 percent
- (D) 35 percent

82. A transmission line whose characteristic impedance is a pure resistance

- (A) must be a lossless line
- (B) must be a distortionless line
- (C) may not be a lossless line
- (D) may not be a distortionless line

83. A mathematical expression for 50 Hz sinusoidal voltage of peak value 80 V will be

- (A) $v = 50 \sin 314 t$
- (B) $v = 50 \sin 80 t$
- (C) $v = 80 \sin 314 t$
- (D) $v = 80 \sin 50 t$

84. The average value of a full-wave rectified sine wave with period π and a peak value of V_m is

- (A) $0.707 V_m$
- (B) $0.500 V_m$
- (C) $0.637 V_m$
- (D) $0.318 V_m$

85. A particular current is made up of two components, a 10 A d.c. and a sinusoidal current of peak value of 14.14 A. The average value of the resultant current is
- (A) zero
(B) 24.14 A
(C) 10 A
(D) 14.14 A
86. The r.m.s. value of a half-wave rectified symmetrical square wave current of 2 A is
- (A) $\sqrt{2}$ A
(B) 1 A
(C) $1/\sqrt{2}$ A
(D) $\sqrt{3}$ A
87. In a purely resistive circuit, the average power P_{av} is _____ the peak power P_{max} .
- (A) double
(B) one-half of
(C) one-fourth of
(D) equal to
88. A 10 mH inductor carries a sinusoidal current of 1 A r.m.s. at a frequency of 50 Hz. The average power dissipated by the inductor is
- (A) zero
(B) 0.25 W
(C) 0.5 W
(D) 1.0 W
89. The power factor of a practical inductor is
- (A) unity
(B) zero
(C) lagging
(D) leading
90. Due to skin effect, the current flows
- (A) uniformly through the conductor
(B) near the surface of the conductor
(C) through the central core of the conductor
(D) in the centre of the conductor
91. For a 3-phase balanced condition, each phase has the same value of
- (A) impedance
(B) resistance
(C) power factor
(D) All of the above
92. For a delta-connected circuit, the correct relationship is
- (A) $V_L = V_{Ph}$
(B) $I_{Ph} \times \sqrt{3} = I_L$
(C) $V_L = I_L \times \sqrt{3}$
(D) Both (A) and (B)

93. A 3-phase, 4-wire system supplies power to a balanced star-connected load. The current in each phase is 15 A. The current in the neutral wire is
- (A) 15 A
 - (B) 45 A
 - (C) 0 A
 - (D) 8.66 A
94. To improve the power factor in 3-phase circuits, the capacitor bank is connected in delta to make
- (A) the capacitance calculation easy
 - (B) the capacitance very small
 - (C) the connection elegant
 - (D) the p.f. correction more effective
95. In a 3-phase supply, floating neutral is undesirable because it may result in _____ across the load.
- (A) unequal line voltages
 - (B) high voltage
 - (C) low voltage
 - (D) None of the above
96. There are no transients in pure resistive circuits because they
- (A) offer high resistance
 - (B) obey Ohm's law
 - (C) have no stored energy
 - (D) are linear circuits
97. For a d.c. voltage, an inductor
- (A) is virtually a short circuit
 - (B) is an open circuit
 - (C) It depends on polarity
 - (D) It depends on voltage value
98. If a unit step current is passed through a capacitor, what will be the voltage across the capacitor?
- (A) Zero
 - (B) A step function
 - (C) A ramp function
 - (D) An impulse function
99. An *R-C* series circuit is excited by a d.c. source. After switching it on
- (A) the voltages across the resistance and capacitance are equal
 - (B) the voltage across the resistance is zero
 - (C) the voltage across the capacitance is zero
 - (D) the sum of the voltages across *R* and *C* is always equal to the supply voltage
100. In active filter circuits, inductances are avoided mainly because they
- (A) are always associated with some resistance
 - (B) are bulky and unsuitable for miniaturization
 - (C) are non-linear in nature
 - (D) saturate quickly

101. The Fourier series expansion of an even periodic function contains

- (A) only cosine terms
- (B) cosine terms and a constant
- (C) only sine terms
- (D) sine terms and a constant

102. Energy of a power signal is

- (A) finite
- (B) zero
- (C) infinite
- (D) between 1 and 2

103. Width of an energy band depends on which of the following?

- (A) Temperature
- (B) Pressure
- (C) Mass of atom in a material
- (D) Relative freedom of electrons in the crystal

104. Elements can reach a stable atomic structure by

- (A) losing electrons only
- (B) gaining electrons only
- (C) losing or gaining or sharing electrons
- (D) None of the above

105. What is the correct sequence of the following materials in ascending order of their resistivities?

- 1. Iron
- 2. Silver
- 3. Constantan
- 4. Mica
- 5. Aluminium

Choose the correct option.

- (A) 2, 5, 1, 3, 4
- (B) 4, 5, 3, 1, 2
- (C) 2, 3, 1, 5, 4
- (D) 4, 5, 1, 3, 2

106. Superconductivity is a material property associated with

- (A) changing shape by stretching
- (B) stretching without breaking
- (C) a loss of thermal resistivity
- (D) a loss of electrical resistance

107. In a superconductor, if the temperature is decreased below its critical temperature, the value of the critical magnetic field will

- (A) increase
- (B) decrease
- (C) not change
- (D) increase or decrease depending on the superconductor material

108. A superconductor may be used for generating

- (A) voltage
- (B) pressure
- (C) temperature
- (D) magnetic field

- 109.** Magnetic field of the Earth has no vertical component at
- (A) magnetic poles
 - (B) magnetic equator
 - (C) latitude 45°
 - (D) longitude 45°
- 110.** Which of the following magnetic materials has the highest reluctance?
- (A) Ferromagnetic
 - (B) Paramagnetic
 - (C) Diamagnetic
 - (D) None of the above
- 111.** A transformer steps up the voltage by a factor 100. The ratio of the current in the primary to that in the secondary is
- (A) 1
 - (B) 100
 - (C) 0.01
 - (D) 0.1
- 112.** The applied voltage of a certain transformer is increased by 75%, while the frequency of the applied voltage is reduced by 25%. The maximum core flux density will
- (A) increase by seven times
 - (B) increase by three times
 - (C) reduce to one quarter
 - (D) remain the same
- 113.** The efficiency of two identical transformers under load condition can be determined by
- (A) back-to-back test
 - (B) open-circuit test
 - (C) short-circuit test
 - (D) Any of the above
- 114.** The efficiency of a power transformer can be determined indirectly by
- (A) open-circuit test alone
 - (B) short-circuit test alone
 - (C) open-circuit and short-circuit tests
 - (D) back-to-back test
- 115.** The transformer efficiency will be maximum at a power factor of
- (A) 0.8 leading
 - (B) unity
 - (C) 0.8 lagging
 - (D) 0.5 leading or lagging
- 116.** The e.m.f. induced in a conductor rotating in a bipolar field is
- (A) d.c.
 - (B) a.c.
 - (C) d.c. and a.c. both
 - (D) None of the above

117. In d.c. machine armature winding, the number of commutator segments is equal to the number of
- (A) armature coils
 - (B) armature coil sides
 - (C) armature conductors
 - (D) armature turns
118. For both lap and wave windings, there are as many commutator bars as the number of
- (A) armature conductors
 - (B) winding elements
 - (C) poles
 - (D) slots
119. Aluminium is not used as a winding wire in d.c. armature as it
- (A) is costlier
 - (B) is of low resistivity
 - (C) is of lower thermal conductivity
 - (D) requires large winding space
120. Modern alternators are designed to have poor regulation as it
- (A) increases the value of short-circuit current
 - (B) limits the value of short-circuit current
 - (C) increases the efficiency of operation
 - (D) Both (A) and (C)
121. In which of the following is reluctance power developed?
- (A) Salient pole alternator
 - (B) Non-salient pole alternator
 - (C) Squirrel-cage induction motor
 - (D) Transformer
122. A 3-phase synchronous motor has
- (A) high starting torque
 - (B) no starting torque
 - (C) low starting current
 - (D) low starting torque
123. Reluctance motor
- (A) is self-starting
 - (B) runs at constant speed
 - (C) needs no d.c. excitation for its rotor
 - (D) All of the above
124. In a 3-phase, squirrel-cage induction motor
- (A) rotor conductors are short circuited through end rings
 - (B) rotor conductors are short circuited through slip rings
 - (C) rotor conductors are kept open
 - (D) None of the above

- 125.** The rotor winding for a 3-phase, slip-ring induction motor having delta-connected stator must be connected in
- (A) delta
 - (B) star
 - (C) delta or star according to need
 - (D) None of the above
- 126.** The induction motor shaft should be
- (A) hollow
 - (B) stiff
 - (C) flexible
 - (D) Any of the above
- 127.** Single-phase preventer
- (A) suppresses negative sequence current
 - (B) compensates for voltage drop
 - (C) provides protection in the event of non-availability of one of the phases
 - (D) None of the above
- 128.** Which of the following a.c. motors is widely used?
- (A) Squirrel-cage induction motor
 - (B) Slip-ring induction motor
 - (C) Double-cage induction motor
 - (D) Synchronous motor
- 129.** The heat generated in a transformer is dissipated in the surroundings mainly by
- (A) conduction
 - (B) convection
 - (C) radiation
 - (D) conduction and convection
- 130.** Commercially available medium size machines have the speed ranging from
- (A) 300 r.p.m. to 400 r.p.m.
 - (B) 600 r.p.m. to 800 r.p.m.
 - (C) 1200 r.p.m. to 1500 r.p.m.
 - (D) 2000 r.p.m. to 2500 r.p.m.
- 131.** The maximum short-circuit current occurs in case of
- (A) three-phase bolted fault
 - (B) double line-to-ground fault
 - (C) line-to-line fault
 - (D) single line-to-ground fault
- 132.** Series reactors are used to
- (A) improve the transmission efficiency
 - (B) improve the power factor of transmission system
 - (C) improve the voltage regulation
 - (D) bring down the fault level within the capacity of the switchgear

133. The purpose of backup protection is

- (A) to increase the speed
- (B) to increase the reach
- (C) to leave no blind spot
- (D) to guard against failure of primary

134. Protective relays can be designed to respond to

- (A) light intensity and temperature
- (B) resistance, reactance and impedance
- (C) voltage and current
- (D) All of the above

135. The actuating quantity of a relay may be

- (A) magnitude
- (B) frequency
- (C) phase angle
- (D) Any of the above

136. IDMT relays are used to protect a power transformer against

- (A) external short circuit
- (B) overloads
- (C) internal short circuit
- (D) Both (A) and (B)

137. Buchholz relay protects a transformer from

- (A) all types of internal fault
- (B) turn-to-turn fault
- (C) winding-to-winding fault
- (D) None of the above

138. Admittance relay is

- (A) non-directional relay
- (B) directional relay
- (C) differential relay
- (D) None of the above

139. Differential relays are used for the protection of

- (A) feeders
- (B) alternators
- (C) transformers
- (D) All of the above

140. An elevator drive is required to operate in

- (A) one quadrant only
- (B) two quadrants
- (C) three quadrants
- (D) four quadrants

141. Which motor should **not** be used for centrifugal pumps?
- (A) Shunt
 - (B) Series
 - (C) Cumulatively compound
 - (D) Differentially compound
142. Direct resistance heating is used in
- (A) electrode boiler
 - (B) salt-bath furnace
 - (C) resistance welding
 - (D) All of the above
143. The maximum operating voltage is limited
- (A) to 600 V
 - (B) from safety consideration
 - (C) by electrical insulation at high temperature
 - (D) All of the above
144. In an amplifier, variation in β causes
- (A) bias instability
 - (B) bias stability
 - (C) zero bias
 - (D) None of the above
145. If in a transistor circuit I_B remains constant but β increases, the
- (A) operating point will go down
 - (B) operating point will go up
 - (C) operating point will not change its position
 - (D) operating point will shift as per the value of base current I_B
146. The emitter resistor R_E is bypassed by a capacitor in order to
- (A) stabilize the Q-point
 - (B) cause thermal runaway
 - (C) increase the voltage gain
 - (D) reduce the voltage gain
147. The amplifier gain varies with frequency. This happens mainly due to
- (A) Miller effect
 - (B) logarithmic increase in its output power
 - (C) interstage transformer
 - (D) presence of internal and external capacitances
148. For a critically damped system, the closed-loop poles are
- (A) purely imaginary
 - (B) real, equal and negative
 - (C) complex conjugate with negative real part
 - (D) real, unequal and negative
149. White noise has _____ power spectral density.
- (A) non-uniform
 - (B) uniform
 - (C) Gaussian
 - (D) triangular
150. Which of the following types of noise is important at high frequency?
- (A) Shot noise
 - (B) Random noise
 - (C) Impulse noise
 - (D) Transit-time noise