Junior Engineer Grade-I (Electrical) under P.H.E Department

Year of Advt: 2025 **Date of Exam: 09-August-2025**

Booklet Serial No. 20241

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

SERIES : I

QUESTION BOOKLET

Subjects : General English 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 two Parts :

Part—A	**:**	**General English**	**:**	**50 questions**
Part—B	**:**	**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 :

   Ⓐ Ⓑ Ⓒ Ⓓ

   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 :

   Ⓐ Ⓑ ● Ⓓ

   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* : 100)

Each question carries **2** marks

Directions **(Q. Nos. 1–5) :**
In the following questions, some parts of the sentences may have errors. Find out which part of each sentence i.e., (A), (B), (C) has an error and select the appropriate option. If there is no error, then (D) is the answer.

1. Students who attempted the questions paper (A) / have met some of their professors, seeking (B) / informed answers to these questions. (C) / No error (D)

2. When Albert stayed at the African jungle (A) / he chose to put up with many inconveniences such as (B) / wild animals and poisonous insects. (C) / No error (D)

3. Each one of his sisters (A) / were (B) / hardworking. (C) / No error (D)

4. Megan lived in Mumbai (A) / since 1970 to 1985, (B) / but is now living in Chennai. (C) / No error (D)

5. It has been shown that (A) / very high doses of vitamin C actually (B) / causes cancer cells to grow. (C) / No error (D)

Directions **(Q. Nos. 6–9) :**
In the following questions, each sentence is given with a blank to be filled in with an appropriate word. Select the correct alternative out of the four and indicate it by selecting the appropriate option.

6. It is mainly due to Peter's lethargy that the plan fell _____.

(A) off
(B) through
(C) in
(D) out

7. Mother shall return _____ an hour.

(A) in
(B) after
(C) during
(D) within

8. Private companies do not produce new varieties and inputs _____ as a result of their own research.

(A) sincerely

(B) purportedly

(C) entirely

(D) abjectly

9. Environmental protection and management is _____ attracting a lot of attention these days.

(A) affectedly

(B) deservedly

(C) acridly

(D) lewdly

***Directions* (Q. Nos. 10–12) :**

In the following questions, out of the four alternatives, select the word which is similar in meaning to the given word.

10. Inanition

(A) Lethargy

(B) Offensive

(C) Vacillating

(D) Grasping

11. Crescendo

(A) Dominate

(B) Escalation

(C) Squander

(D) Revere

12. Esoteric

(A) Befitting

(B) Germane

(C) Abstruse

(D) Relevant

***Directions* (Q. Nos. 13–15) :**

In the following questions, out of the four alternatives, select the word which is opposite in meaning to the given word.

13. Acerbic

(A) Foretell

(B) Amazed

(C) Harsh

(D) Bland

14. Ribald

(A) Provision

(B) Biased

(C) Clean

(D) Vulgar

15. Scurrilous

(A) Coarse

(B) Sophisticated

(C) Insolent

(D) Complimentary

***Directions* (Q. Nos. 16–20) :**

Select the correct option from the four alternatives given to improve the bracketed part of the sentence.

16. I had not completed my project so I thought I was (done with) when the Manager asked me to hand it in.

(A) done for

(B) done in

(C) done on

(D) No improvement

17. Robin was upset and so (picked up) his food while his cousins ate heartily.

(A) picked out

(B) picked on

(C) picked at

(D) No improvement

18. Serious charges of corruption were (levied against) him.

(A) put

(B) levelled against

(C) made

(D) No improvement

19. As soon as our plan is approved, I shall favor (its') adoption.

(A) it

(B) it's

(C) its

(D) No improvement

20. I prefer remaining silent (to) speaking falsehood.

(A) than

(B) more than

(C) rather than

(D) No improvement

***Directions* (Q. Nos. 21–25) :**

In the following questions, out of the four alternatives given, select the word(s) which best express(es) the meaning of the Idiom/Phrase.

21. To give up a throne voluntarily

(A) Archer

(B) Bigot

(C) Abdicate

(D) Delegate

22. A science of race, culture and human development

(A) Tannery

(B) Eugenics

(C) Volley

(D) Treak

23. Medicine that causes vomiting

(A) Valise

(B) Analgesic

(C) Pyretic

(D) Emetic

24. Carry the can

(A) To listen to something with considerable doubt

(B) To be impatient

(C) To be in touch

(D) To take the responsibility of some misdemeanor

25. Be a dab hand at something

(A) Always telling nonsense

(B) Hearing a fake intention

(C) Ready to listen to other people's conversation

(D) Skilled in a particular area

***Directions* (Q. Nos. 26–30) :**

In the following passage some of the words have been left out. Read the passage carefully and select the correct answer for the given blank out of the four alternatives.

The quest for a **26** life engrosses every human being on this earth. Everyman tends to define a happy life in a **27** individualistic fashion. **28** have attempted to define a happy life in various terms. Hedonists have a **29** notion that happiness lies in the **30** of physical appetites.

26. (A) simple

(B) sad

(C) happy

(D) real

27. (A) distinctly

(B) identically

(C) similar

(D) serious

28. (A) Professors

(B) Thinkers

(C) Researchers

(D) Scientists

29. (A) complex

(B) distinct

(C) varied

(D) simple

30. (A) gratification

(B) simplification

(C) purification

(D) identification

***Directions* (Q. Nos. 31–34) :**

In each of the following questions, a sentence has been given in Direct/ Indirect speech. Out of the four alternatives suggested, select the one which best expresses the same sentence in Indirect/Direct speech.

31. Juhi said to her friend, "I can choose to live the way I want to."

(A) Juhi told her friend that she can choose to live the way she want to.

(B) Juhi told her friend that she could be choosing to live the way she wants to.

(C) Juhi told her friend that she chooses to live the way she wanted to.

(D) Juhi told her friend that she could choose to live the way she wanted to.

32. The boss said to the Secretary, "Bring the file that I had given to you yesterday."

(A) The boss told the Secretary to bring the file that I had given to her the day before.

(B) The boss told his Secretary to bring the file that he gave her yesterday.

(C) The boss told the Secretary to bring the file that he had given to her the day before.

(D) The boss had told the Secretary to bring the file that he had given to her yesterday.

33. "Where are you going?" Father asked me.

(A) Father asked me where I am going.

(B) Father asked me that where you are going.

(C) Father asked me where I would be going.

(D) Father asked me where I was going.

34. My friend said to me, "I am not going to talk to you."

(A) The friend has told me that he is not going to talk to me.

(B) The friend told me that he would not be talking to me.

(C) My friend told me that he was not going to talk to me.

(D) The friend has told me that he is never going to talk with me.

***Directions* (Q. Nos. 35–38) :**

In each of the following questions, a sentence has been given in Active/ Passive voice. Out of the four alternatives suggested, select the one which best expresses the same sentence in Passive/ Active voice.

35. The carpenters will take a month's time to make the furniture.

(A) A month's time is took by the carpenter to make the furniture.

(B) The carpenters to make the furniture will take a month's time.

(C) A month's time will be taken by the carpenter to make the furniture.

(D) Making of the furniture by the carpenters will take a month's time.

36. The city will build a new bridge across the river.

(A) A new bridge across the river will be built by the city.

(B) A bridge which is new will be built by the city.

(C) Building of a new bridge will be done by the city.

(D) The city will be building a new bridge across the river.

37. Grandmother is knitting a sweater for you.

(A) A sweater is being knit by grandmother for you.

(B) A sweater will be knit by grandmother for you.

(C) Grandmother is knitting for you a sweater.

(D) Knitting of a sweater has been done by grandmother for you.

38. Two engines are pulling the train up the hill.

(A) The train will be pulled up the hill by two engines.

(B) Up the hill pulling of the train is being done by the two engines.

(C) The train is being pulled up the hill by two engines.

(D) Two engines are needed for pulling the train up the hill.

***Directions* (Q. Nos. 39–41) :**

In the following questions, four words are given, out of which only one word is correctly spelt. Find the correctly spelt word.

39. (A) Orthopeadic

(B) Orthopadic

(C) Orthopaedic

(D) Orthopedic

40. (A) Miscellaneous

(B) Micellaneous

(C) Misellaneous

(D) Miscelaneous

41. (A) Diarrhoea

(B) Diarrehia

(C) Diariheoa

(D) Diarihoea

***Directions* (Q. Nos. 42–45) :**

In the following questions, the first and the last part of the sentence/passage are numbered 1 and 6. The rest of the sentence/passage is split into four parts and named P, Q, R and S. These four parts are not given in their proper order. Read the sentence/passage and find out which of the four combinations is correct.

42. 1. The master returned home after sometime.

P. The snake was lying dead under the cradle.

Q. He went into the room where the baby was sleeping.

R. It had been killed by his dog.

S. He noticed a snake.

6. He realized that his dog had saved his baby.

(A) SRPQ

(B) QRPS

(C) QSPR

(D) PQRS

43. 1. Adversity is a curse.

P. When everything goes on well, we are tempted to take matters easy.

Q. But, it has its uses also.

R. But adversity prompts us to exert ourselves.

S. We fall into a life of comfort and idleness.

6. This develops our latent powers, enabling us to prosper in life.

(A) QSPR

(B) QPSR

(C) QRSP

(D) QSRP

44. 1. A traveller had spent many a year in Africa.

P. "How did you manage it?" Asked one of his friends, greatly impressed.

Q. On his return home, he narrated his adventures to his friends.

R. "Oh, it was nothing", replied the traveller.

S. "When I was in El Doab", he said, "I made fifty Arabs run!"

6. "I ran, and they ran after me!"

(A) RPQS

(B) QRSP

(C) QSPR

(D) PQSR

45. 1. We wanted to relax and have fun.

P. All of us agreed to share responsibilities.

Q. Two of us took our cars.

R. We decided to go for a picnic to Golf Links.

S. Each one of us brought one dish, some fruits and sweets.

6. We enjoyed ourselves a lot and felt a welcome change in our monotonous life.

(A) SPQR

(B) PRQS

(C) RPQS

(D) SRPQ

***Directions* (Q. Nos. 46–50) :**

Read the passage carefully and choose the best answer to each question out of the four alternatives.

The environment comprises all the physical, social and cultural factors and conditions influencing the existence or the development of an organism. Due to indiscriminate industrialization, man has created a state of decadence. He has continuously tampered with nature which has resulted in the threat to the sustenance of mankind. Although, attempts have been made to restore nature to its previous state of purity and serenity, the efforts have not been whole-hearted. Earth is the home we all share and would pass on to our future generations as their legacy. But if they inherit the present state of the world, they would be unable to sustain themselves. Man has steadily improved the technologies and other means necessary for higher production of wealth and for the availability of devices that could give more physical and mental pleasures. The industrial revolution led to a drastic escalation of earth's surface temperature. Man exploited nature for his benefits, without any foresight as to what the implications of his actions would be. Indiscriminate industrialization resulted in urban migration as the rural poor settled in cities in search of opportunities. Cities, already facing a population crisis could not accommodate the migrants and this led to the development of slums. This has resulted in increased pressure on the available resources and further degradation of the environment.

46. A state of decadence has come about because of

(A) indiscriminate utilization of resources

(B) half-hearted attempts

(C) natural disasters

(D) None of the above

47. Why would the future generations find it difficult to live on the earth?

(A) Due to global warming

(B) Because they would have inherited an overexploited environment

(C) Because they would rely only on technology

(D) Due to lack of sustainability

48. Implication means

(A) after effects

(B) explicit statement

(C) wrong doing

(D) causes

49. The theme of the passage is

(A) environmental degradation

(B) environmental pollution

(C) crisis faced by the modern world

(D) All of the above

50. Industrialization has resulted in

(A) overpopulation

(B) crowding of cities

(C) migration of people to the cities

(D) Both (B) and (C)

PART—B : ELECTRICAL ENGINEERING

(*Marks* : 200)

Each question carries **2** marks

51. If the length of a wire of resistance R is uniformly stretched to n times its original value, then its new resistance will be

(A) nR

(B) R/n

(C) n^2R

(D) R/n^2

52. 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

53. 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

54. Twelve 1-Ω resistances are used as edges to form a cube. The resistance between two diagonally opposite corners of the cube is

(A) $\frac{5}{6}\Omega$

(B) $1\,\Omega$

(C) $\frac{6}{5}\Omega$

(D) $\frac{3}{2}\Omega$

55. Which of the following relations is ***not*** correct?

(A) $P = V/R^2$

(B) $P = VI$

(C) $I = \sqrt{\frac{P}{R}}$

(D) $V = \sqrt{PR}$

56. 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

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

(A) passive

(B) active

(C) linear

(D) non-linear

58. The current in a coil changes uniformly from 10 A to 1 A in half a second. A voltmeter connected across the coil gives a reading of 36 V. The self-inductance of the coil is

(A) 0·5 H

(B) 1 H

(C) 2 H

(D) 4 H

59. An ideal voltage source should have

(A) large e.m.f.

(B) small e.m.f.

(C) zero resistance

(D) zero potential

60. Three 30-Ω resistors are connected in parallel across an ideal 40 V source. What will be the equivalent resistance seen by the load connected across the circuit?

(A) 0 Ω

(B) 10 Ω

(C) 20 Ω

(D) 30 Ω

61. The dual of a parallel *R-C* circuit is a

(A) series *R-C* circuit

(B) series *R-L* circuit

(C) parallel *R-C* circuit

(D) parallel *R-L* circuit

62. Kirchhoff's laws are ***not*** applicable to circuits with

(A) distributed parameters

(B) lumped parameters

(C) passive elements

(D) non-linear resistance

63. Consider the following statements :

A phasor

1. may be a scalar or a vector
2. is a time-dependent quantity
3. is a complex quantity

Which of the above statements are correct?

(A) 1, 2 and 3

(B) 1 and 2 only

(C) 1 and 3 only

(D) 2 and 3 only

64. The unit of electric intensity is

(A) joule/coulomb

(B) newton/coulomb

(C) volt/meter

(D) Both (B) and (C)

65. Who introduced the concept of time-varying electric field producing a magnetic field?

(A) Gauss

(B) Faraday

(C) Hertz

(D) Maxwell

66. The conductance of electric circuit is analogous in magnetic circuit by

(A) flux

(B) reluctance

(C) permeance

(D) relative permeability

67. The unit of magnetic flux density is

(A) gauss

(B) tesla

(C) boltz

(D) weber/sec

68. An air gap is usually inserted in magnetic circuits so as to

(A) prevent saturation

(B) increase e.m.f.

(C) increase flux

(D) increase inductance

69. The laws of electromagnetic induction (Faraday's and Lenz's laws) are summarized in which of the following equations?

(A) $e = LR$

(B) $e = L\frac{di}{dt}$

(C) $e = -\frac{d\psi}{dt}$

(D) None of the above

70. Linkage flux per unit current is called

(A) capacitance

(B) resistance

(C) inductance

(D) capacitive reactance

71. An alternating voltage is given by the equation

$$V = 282{\cdot}84 \sin\left(377t + \frac{\pi}{6}\right)$$

What are the values of r.m.s. voltage, frequency and time period?

(A) 20 V, 60 Hz and 0·0167 s

(B) 200 V, 50 Hz and 0·02 s

(C) 200 V, 60 Hz and 0·0167 s

(D) 20 V, 50 Hz and 0·0167 s

72. When the frequency of the applied voltage (sine wave) across an inductor is increased, then the current will

(A) decrease

(B) increase

(C) remain the same

(D) become zero

73. Skin effect occurs when a conductor carries current at

(A) very low frequency

(B) low frequency

(C) high frequency

(D) None of the above

74. The unit of a reactive power is

(A) VA

(B) watt

(C) VAR

(D) ohm

75. The power consumed by a coil is 300 W when connected to a 30 V d.c. source and 108 W when connected to a 30 V a.c. source. The reactance of the coil is

(A) 3 Ω

(B) 4 Ω

(C) 5 Ω

(D) 6·67 Ω

76. When the Q-factor of a circuit is high, then

(A) power factor of the circuit is high

(B) impedance of the circuit is high

(C) bandwidth is large

(D) None of the above

77. Norton's theorem states that a complex network connected to a load can be replaced with an equivalent impedance

(A) in series with a current source

(B) in parallel with a voltage source

(C) in series with a voltage source

(D) in parallel with a current source

78. Which of the following functions represents parabolic characteristic?

(A) $f(t) = t$

(B) $f(t) = t^2$

(C) $f(t) = e^{-at}$

(D) None of the above

79. Ionic bonding in solids depends primarily on

(A) transfer of electrons

(B) sharing of electrons

(C) electrical dipoles

(D) All of the above

80. The specific resistance of a conductor depends upon

(A) dimensions of the conductor

(B) composition of the conductor material

(C) resistance of the conductor

(D) Both (A) and (B)

81. Thermocouple is based on

(A) Seebeck effect

(B) Thomson effect

(C) Joule effect

(D) None of the above

82. With the increase in applied frequency, the dielectric loss in a material will

(A) increase

(B) decrease

(C) remain constant

(D) become zero

83. Which of the following insulating materials has the least affinity for moisture?

(A) Cotton

(B) Paper

(C) Asbestos

(D) Mica

84. Permeance is inversely related to

(A) resistance

(B) conductance

(C) reluctance

(D) capacitance

85. The electromagnet is made of

(A) soft iron core

(B) steel core

(C) soft iron core wrapped in a coil of fine wire with current flowing through it

(D) Any of the above methods

86. The primary and secondary windings of a power transformer always have

(A) a common magnetic circuit

(B) separate magnetic circuits

(C) wire of same size

(D) same number of turns

87. The flux in transformer core

(A) increases with load

(B) decreases with load

(C) remains constant irrespective of load

(D) None of the above

88. Transformer oil must be free from

(A) moisture

(B) sludges

(C) gases

(D) sulphur

89. The winding used in a 3-phase shell-type transformer is of _____ type.

(A) circular

(B) cylindrical

(C) sandwich

(D) rectangular

90. Two transformers operating in parallel will share the load depending upon their

(A) ratings

(B) leakage reactance

(C) efficiency

(D) per-unit impedance

91. Autotransformer can do which of the following?

(A) Step up voltage

(B) Step down voltage

(C) Both (A) and (B)

(D) None of the above

92. In a Constant Voltage Transformer (CVT), the output voltage remains constant due to

(A) capacitor

(B) input inductor

(C) saturation

(D) tapped windings

93. In a d.c. motor, the windage loss is proportional to

(A) supply voltage

(B) square of the supply voltage

(C) square of the flux density

(D) square of the armature speed

94. The armature of a d.c. machine is made of

(A) conducting material

(B) insulating material

(C) non-ferrous material

(D) silicon steel

95. In modern alternators, the rotating part is

(A) field system

(B) armature

(C) armature as well as the field system

(D) None of the above

96. Which type of alternator is used in hydroelectric power stations?

(A) Non-salient pole alternator

(B) Turbo generator

(C) Salient pole alternator

(D) Steam turbine alternator

97. In case of turbo-alternators, rotor is made of

(A) forged steel

(B) cast iron

(C) stainless steel

(D) manganese steel

98. Hydro-generators are generally employed to run at _____ r.p.m.

(A) 500

(B) 1000

(C) 1500

(D) 3000

99. The induction motor shaft is made of

(A) mild steel

(B) cast iron

(C) high-speed steel

(D) stainless steel

100. What is the material of slip rings in an induction machine?

(A) Carbon

(B) Nickel

(C) Phosphor bronze

(D) Manganese

101. The induction motor shaft should be

(A) hollow

(B) stiff

(C) flexible

(D) Any of the above

102. An 8-pole alternator runs at 750 r.p.m. It supplies power to a 6-pole induction motor which has a full-load slip of 3%. The full-load speed of the motor is

(A) 1050 r.p.m.

(B) 970 r.p.m.

(C) 960 r.p.m.

(D) 1250 r.p.m.

103. The direction of rotor current produced in an induction motor can be determined by

(A) Lenz's law

(B) induction law

(C) Fleming's right-hand rule

(D) Fleming's left-hand rule

104. Which of the following lamps will you recommend for kitchen to a poor man?

(A) Sodium vapour lamp

(B) Incandescent lamp

(C) Mercury iodide lamp

(D) Carbon arc lamp

105. Aluminium conductor cables can be joined by

(A) gas welding

(B) soldering

(C) compression

(D) thermit welding

106. The minimum distance of underground cable from the foundation of building should be

(A) 100 cm

(B) 50 cm

(C) 10 cm

(D) 5 cm

107. Which of the following distribution systems is ***not*** normally used?

(A) 3-phase, 3-wire

(B) 3-phase, 4-wire

(C) Single-phase, 3-wire

(D) Single-phase, 2-wire

108. Which of the following d.c. distribution systems is the simplest and cheapest in first cost?

(A) Radial

(B) Ring main

(C) Interconnected

(D) None of the above

109. An electron device means the device in which the conduction of electrons takes place through

(A) gas

(B) vacuum

(C) semiconductor

(D) gas, semiconductor or vacuum

110. A device having characteristics very close to that of an ideal voltage source is

(A) vacuum diode

(B) Zener diode

(C) transistor

(D) FET

111. The main reason why electrons can tunnel through a *P-N* junction is that

(A) they have high energy

(B) their barrier potential is very low

(C) their depletion layer is extremely thin

(D) their impurity level is low

112. If one of the diodes in a full-wave bridge rectifier opens, the output is

(A) 0 V

(B) one-fourth the amplitude of the input voltage

(C) a half-wave rectified voltage

(D) a 120-Hz voltage

113. In voltage amplifiers, the load resistance should be

(A) as large as possible

(B) as small as possible

(C) equal to output impedance

(D) equal to input impedance

114. In case of amplifiers, which coupling gives the highest gain?

(A) Transformer coupling

(B) Resistance coupling

(C) Impedance coupling

(D) Capacitance coupling

115. A logic gate is an electronic circuit which

(A) operates in binary algebra

(B) performs arithmetic and logic functions

(C) allows the flow of electrons only in one direction

(D) alternates between 0 and 1 values

116. Personal computer ***cannot*** be used for which one of the following?

(A) Game playing

(B) Weather forecasting

(C) Office automation

(D) Home computing

117. Data paths are used to study

(A) control circuits only

(B) data circuits only

(C) combined data and control circuits

(D) None of the above

118. A memory system has a total of 8 memory chips, each with 12 address lines and 4 data lines. The total size of the memory system is

(A) 32 k bytes

(B) 48 k bytes

(C) 64 k bytes

(D) 16 k bytes

119. In a closed-loop control system

(A) control action is independent of output

(B) output is independent of input

(C) there is no feedback

(D) control action is dependent on output

120. A thyristor equivalent to a thyratron tube is

(A) SCR

(B) UJT

(C) Diac

(D) Triac

121. After firing an SCR, the gate pulse is removed. The current in the SCR will

(A) remain the same

(B) immediately fall to zero

(C) rise up

(D) rise a little and then fall to zero

122. In digital communication system, the data transmission rate is specified in

(A) MHz

(B) bits/second

(C) bytes/second

(D) bauds

123. In TV, video signals are transmitted through

(A) amplitude modulation

(B) frequency modulation

(C) either amplitude or frequency modulation

(D) neither amplitude nor frequency modulation

124. When a human being tries to approach an object, his brain acts as

(A) an error measuring device

(B) a controller

(C) an actuator

(D) an amplifier

125. An automatic washing machine is a/an

(A) sampled data controlled system

(B) closed-loop system

(C) open-loop system

(D) digital control system

126. Welding leads have

(A) high current-carrying capacity

(B) high flexibility

(C) Both (A) and (B)

(D) None of the above

127. The eyes of a welding operator must be protected against

(A) infrared radiation

(B) ultraviolet radiation

(C) Both (A) and (B)

(D) solar radiation

128. In domestic refrigeration, compressor and motor are assembled in a single unit known as _____ sealed unit.

(A) hermetically

(B) homogeneously

(C) heterogeneously

(D) None of the above

129. The rating of a synchronous machine is usually governed by its

(A) speed

(B) temperature rise

(C) weight

(D) None of the above

130. The magnetic field required to reduce the residual magnetization to zero is called

(A) retentivity

(B) coercivity

(C) hysteresis

(D) saturation

131. Capacitors are used in power system to

(A) improve supply power factor

(B) improve voltage regulation

(C) change the load characteristics

(D) All of the above

132. The material used for armoring of an underground cable is

(A) galvanized steel wire

(B) steel tape

(C) aluminum

(D) Either (A) or (B)

133. One kilogram of natural uranium gives energy equivalent to

(A) 100 kg of coal

(B) 1000 kg of coal

(C) 5000 kg of coal

(D) 10000 kg of coal

134. The primary function of a fuse is to

(A) open the circuit

(B) protect the appliance

(C) protect the line

(D) prevent excessive current flowing through the circuit

135. A circuit breaker normally operates

(A) when the power is to be supplied

(B) when the line is to be tested

(C) when the switch is to be put on

(D) whenever fault occurs in the line

136. In a circuit breaker, the current that exists at the instant of contact separation is called the _____ current.

(A) restriking

(B) breaking

(C) arc

(D) recovery

137. Insulators have

(A) large energy gap

(B) an empty conduction band

(C) a full valence band

(D) None of the above

138. Voltage-dependent resistors are usually made from

(A) graphite

(B) charcoal

(C) silicon carbide

(D) nichrome

139. Which of the following materials can be used in cable shields?

(A) Copper

(B) Aluminum

(C) Cast iron

(D) Lead

140. Hard magnetic materials are used for making

(A) permanent magnets

(B) temporary magnets

(C) both permanent and temporary magnets

(D) None of the above

141. Which type of core is used for high-frequency transformer?

(A) Air core

(B) Closed iron core

(C) Open iron core

(D) Aluminum core

142. A typical photovoltaic module contains _____ cells.

(A) 24

(B) 36

(C) 42

(D) 54

143. Doping of a silicon cell is done with a substance like

(A) manganese

(B) boron

(C) cadmium

(D) carbon

144. The most commonly used semi-conductor material in solar cells is

(A) GaAs

(B) CuInSe

(C) CdSe

(D) All of the above

145. Windmill converts the kinetic energy of the wind which is equal to

(A) $\frac{1}{2}mv^2$

(B) $P/\pi DN$

(C) P/P_t

(D) None of the above

146. Wind turbine generator converts wind power to electrical power. This motion of the wind is called

(A) force

(B) torque

(C) virtue

(D) power

147. Solar collectors are devices which

(A) convert sun rays to electrical power

(B) absorb heat from the sun, then convert to electrical power

(C) Both (A) and (B)

(D) None of the above

148. Fuel cells technologies are classified in many ways, the most common classification is based on

(A) electrolyte

(B) fuel combination

(C) power

(D) temperature

149. The speed regulation of a 3-phase induction motor at full-load speed is about

(A) 4%

(B) 8%

(C) 15%

(D) 25%

150. Oil and grease from a machine can be removed from the surface with the help of

(A) soaps

(B) hot alkaline solutions

(C) mechanical abrasion

(D) Any of the above