PREVIOUS YEAR PAPER

DSSSB Manager (Electrical) 2023 — 23 November 2023

DSSSB Other Posts · 23 November 2023

176 of the paper's 200 questions · +1 for a correct answer, −0.25 for a wrong one

Left out of the original paper: 24 (any question that needs a figure, a symbol or formatting we cannot show, or whose text did not read back cleanly from the booklet).

Questions from the Delhi Subordinate Services Selection Board's paper of 23 November 2023. Each question is followed by its answer, and the answer key is repeated on the last page.

Take it as a timed practice test: exambharo.com/dsssb-other-posts/previous-year-papers/dsssb-other-posts-2023-manager-electrical-23-nov/

General

1. Which of the following is NOT an example of a Passive component?

(a) Resistor

(b) Capacitor

(c) Inductor

(d) Diode

Answer: (d)

2. Synchronous generators are usually run in _____ connected through long distance transmission lines.

I. Series

II. Parallel

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (b)

4. Which of the following is the correct expression between Voltage and Current?

(a) V = IR

(b) V = I – R

(c) V = I + R

(d) V + I = R

Answer: (a)

5. The effective value of a periodic signal is its _____ value.

(a) RMS

(b) Apparent

(c) Average

(d) Mean

Answer: (a)

6. Which of the following is the correct expression of apparent power?

(a) S = Vrms × Irms

(b) S = Vrms + Irms

(c) S = Vrms – Irms

(d) S = Vrms/Irms

Answer: (a)

7. _____ theorem states that in any linear, active, bilateral network having more than one source, the response across any element is the algebraic sum of the responses obtained from each source considered separately, with all other sources replaced by their internal resistance.

(a) Maxwell

(b) Superposition

(c) Ohm's Law

(d) Thevenin

Answer: (b)

9. What is the decimal equivalent of binary number 11111?

(a) 21

(b) 31

(c) 41

(d) 51

Answer: (b)

10. Using Boolean theorems, what will be the answer of A + Ā?

(a) A

(b) 1

(c) 0

(d) –1

Answer: (b)

12. _____ measures system output signal y(t) and produces feedback signal b(t) which is a function of y(t).

(a) Feedback Signal

(b) Error Detector

(c) Feedback Element

(d) Reference Input Signal

Answer: (c)

13. Which of the following opcodes is NOT used to move data?

(a) MOV

(b) MOVX

(c) PUSH

(d) SUB

Answer: (d)

14. _____ consists of single large motor, which operates a number of machines by means of one or more short length shafts.

(a) Group drive
(b) Individual drive
(c) Multimotor drive
(d) Minimotor drive

Answer: (a)

15. The operation of an equipment between two steady state conditions is known as _____.

(a) Steady operation
(b) Transient operation
(c) Non- transient operation
(d) Ultrasonic operation

Answer: (b)

16. _____ is an on-off switch that connects load and disconnects it from the supply and produces a chopped load voltage from a constant input supply voltage.

(a) Chopper
(b) Rectifier
(c) Transformer
(d) Generator

Answer: (a)

17. The process of processing the signal to make it s able for transmission is called _____.

(a) Modulation
(b) Quantization
(c) Multiplexing
(d) Distribution

Answer: (a)

18. What is the usual frequency of AC supplied in India?

(a) 50 Hz
(b) 500 Hz
(c) 60 Hz
(d) 80 Hz

Answer: (a)

20. Isomers that differ with respect to the arrangements of atoms or groups in space are known as _____.

(a) stereoisomers
(b) normal isomers
(c) polymers
(d) heteromers

Answer: (a)

21. What is the unit of Capacitance?

(a) Ohm

(b) Henry

(c) Farad

(d) Joule

Answer: (c)

22. What is an Auxiliary Motor which is used in starting of synchronous motor?

(a) It is a small DC or induction motor

(b) It is a big AC or resistive motor

(c) It is a big DC or capacitive motor

(d) It is a motor starting on induction principle by means of damper winding

Answer: (a)

23. _____ states that if n is a positive integer and a, n are coprime, then $a^{\varphi(n)} \equiv 1 \bmod n$ where $\varphi(n)$ is the Euler's totient function.

(a) Euler's Theorem

(b) Reciprocity Theorem

(c) Norton's Theorem

(d) Maxwell's Theorem

Answer: (a)

24. A _____ is a loop that does not contain any other loop within it.

I. Mesh

II. Node

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (a)

25. _____ theorem states that the power transferred by a source to the load resistance is maximum when the load resistance is equal to the internal resistance of the source.

(a) Maxwell

(b) Superposition

(c) Maximum power transfer

(d) Thevenin

Answer: (c)

26. The magnetic force is described in terms of _____.

(a) Magnetic field

(b) Electric field

(c) Mechanical friction

(d) Gravity field

Answer: (a)

27. In _____ type of rotor, projected poles are provided on the rotor.
    (a) Salient pole type rotor
    (b) Non-salient pole type rotor
    (c) Cylindrical type rotor
    (d) Non-Cylindrical type rotor
    Answer: (a)

28. Which of the following is a universal gate?
    (a) NAND
    (b) OR
    (c) AND
    (d) NOT
    Answer: (a)

29. Which gate is also known as an inverter?
    (a) NOT
    (b) AND
    (c) OR
    (d) NOR
    Answer: (a)

30. Which of the following statements is INCORRECT ,arding block diagrams?
    (a) Any closed-loop system can be replaced by equivalent open-loop system.
    (b) The gain of cascaded blocks is the subtract of the individual gains.
    (c) The order of summing does not affe .
    (d) Shifting a summing point beyond a block o gain G requires the insertion of G in the A A variable added.
    Answer: (b)

31. What will be the Laplace transform of 1?
    (a) 1/s
    (b) 1
    (c) s
    (d) 1 + s
    Answer: (a)

32. The 8051 microcontrollers have how many 16-bit registers?
    (a) 2
    (b) 4
    (c) 6
    (d) 8
    Answer: (a)

33. Reciprocating pumps is an example of which classification of load torques?

(a) Continuous and constant load

(b) Pulsating loads

(c) Continuous but variable loads

(d) Impact loads

Answer: (b)

34. In _____, regenerative braking is possible only when the load drives the rotor in the same direction as the stator magnetic field with a speed higher than the synchronous speed.

(a) DC series motor

(b) Induction motor

(c) DC parallel motor

(d) DC shunt motor

Answer: (b)

35. _____ represents an operational method for solving linear difference equations and linear control systems with digital data.

(a) z-transform

(b) t-transform

(c) laplace-transform

(d) gaussian-transform

Answer: (a)

36. The number of _____ independent rows in a ma is called rank of matrix.

(a) linearly

(b) singularly

(c) equally

(d) orthogonally

Answer: (a)

37. Determinant of A is equals to _____.

(a) product of eigen values of a

(b) sum of eigen values of a

(c) proportion of eigen value of a

(d) division of eigen value of a

Answer: (a)

38. Protons present in a molecule having the same environment absorb at the same magnetic field strength is known as _____ in nuclear magnetic resonance.

(a) equivalent protons

(b) non-equivalent protons

(c) unequal protons

(d) opposite protons

Answer: (a)

39. What is the application of Michelson interferometer?
I. Determination of wavelength of light.
II. Determination of difference in wavelength.
III. Determination of thickens and refractive index of a thin transparent sheet.

(a) Only I
(b) Only I and III
(c) I, II and III
(d) Only II and III

Answer: (c)

40. Newton's rings can be observed in _____.
I. Reflected light
II. Transmitted light

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

Answer: (c)

41. A changing magnetic field produces _____.

(a) Electric field
(b) Magnetic field
(c) Non-Electrical field
(d) Zero Field

Answer: (a)

42. Which of the following is NOT an example of vector quantity?

(a) Velocity
(b) Acceleration
(c) Momentum
(d) Time

Answer: (d)

43. The magnetic field lines always emerge from which part of the magnet?
I. South Pole
II. North Pole

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

Answer: (b)

44. Concentric windings are used in _____ type transformers.

(a) Shell

(b) Core

(c) Tube

(d) Circular

Answer: (b)

45. In binary algebra what will be the value of (101 + 010)?

(a) 111

(b) 000

(c) 1010

(d) 110

Answer: (a)

46. The highest power of the complex variables in the denominator of the transfer function determines the _____ of system.

(a) Power

(b) Order

(c) Rate

(d) Frequency

Answer: (b)

47. _____ of a linear time-invariant system is defined to be the ratio of the Laplace transform of the output variable to the Laplace transform of the input variable under the assumption that all initial condition are zero.

(a) Transfer function

(b) Feedback function

(c) Laplace function

(d) Block function

Answer: (a)

48. In Block diagram representation _____ is one at which several system variables are added or subtracted.

(a) Pickup point

(b) Summing point

(c) Block point

(d) Linear point

Answer: (b)

49. CPU on a single chip is known as _____.

(a) Microcontroller

(b) Bus

(c) Microprocessor

(d) ALU

Answer: (c)

50. The torque speed characteristic can be modified by inserting _____ in the rotor circuit.
(a) Resistance
(b) Capacitance
(c) Inductance
(d) Friction
Answer: (a)

51. The _____converts the sequence of numbers in the real domain into an expression in complex z- domain.
(a) z-transform
(b) t-transform
(c) laplace-transform
(d) gaussian-transform
Answer: (a)

52. Which of the following is NOT a main component of electric power system?
(a) Power Generation Station
(b) Transmission Lines
(c) Distribution Lines
(d) DC motor
Answer: (d)

55. The dimension of the image of the matrix is known as _____.
(a) rank of matrix
(b) value of matrix
(c) inverse matrix
(d) equal matrix
Answer: (a)

56. In medicine magnetic resonance imaging uses nuclear magnetic resonance (nmr) to detect the _____ nuclei in human body.
(a) Iron
(b) Hydrogen
(c) Magnesium
(d) Sodium
Answer: (b)

57. A mixture of equal parts of enantiomers is called _____ modification.
(a) normal
(b) new
(c) racemic
(d) chemical
Answer: (c)

58. The geometrical isomerism is also a case of _____.

(a) diastereoisomerism

(b) tristereoismerism

(c) polystereoismerism

(d) enantiomers

Answer: (a)

59. Huygen's principle based on which of the following assumption?
I. Each point on the given wave front acts as a source of secondary wavelets.
II. The secondary wavelets from each point travel through space in all the directions with velocity of light.
III. A surface touching the secondary wavelets tangentially in the forward direction at any given time constructs the new wave front at the instant.

(a) Only I

(b) Only II and III

(c) Only I and III

(d) I, II and III

Answer: (d)

60. Which statement is correct regarding Brewster's angle?

(a) The incident angle at which the reflected light is completely polarised

(b) The incident angle at which the reflected light is semi polarised

(c) The incident angle at which the reflected light is reversed

(d) The incident angle at which the reflected light is not polarised

Answer: (a)

61. The physical property, or ability to resist current, is known as _____.

(a) Resistance

(b) Capacitance

(c) Inductance

(d) Admittance

Answer: (a)

62. Which theorem provides the dual of Thevenin's theorem?

(a) Superposition Theorem

(b) Reciprocity Theorem

(c) Norton's Theorem

(d) Maxwell's Theorem

Answer: (c)

63. Which of the following is NOT a starting method for starting a 3-phase squirrel cage induction motor?

(a) Direct starting
(b) Reduced voltage starting
(c) Ground-Earth starting
(d) Stator-impedance starting

Answer: (c)

64. A scalar is a tensor of rank _____.

(a) Zero
(b) One
(c) Two
(d) Three

Answer: (a)

65. If an index appears only once in a term, it has any definite value between 1 and N. Such an index is called a _____.

(a) Free index
(b) Bounded index
(c) Carry index
(d) State index

Answer: (a)

66. _____ is a device used for measuring or maintai g orientation and angular velocity.

(a) Gyroscope
(b) Accelerometer
(c) Compass
(d) Proximity sensor

Answer: (a)

67. The equivalent resistance of two parallel resistors is equal to the _____ of their resistances divided by their sum.

(a) Product
(b) Sum
(c) Division
(d) Subtraction

Answer: (a)

68. _____ theorem states that a linear two-terminal circuit can be replaced by an equivalent circuit consisting of a voltage source V in series with a resistor R , where V is the open-circuit Th Th Th voltage at the terminals and R is the input or equivalent resistance at the terminals when the Th independent sources are turned off.

(a) Maxwell

(b) Superposition

(c) Ohm's Law

(d) Thevenin

Answer: (d)

69. Superposition theorem is applicable to _____ networks.
I. Linear
II. Non-linear

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (a)

70. _____ is a static device that transfers AC electrical power from one circuit to the other at the same frequency but the voltage level is usually changed.

(a) DC motor

(b) DC generator

(c) AC motor

(d) Transformer

Answer: (d)

71. An open loop system has _____ feedback.

(a) Positive

(b) Negative

(c) Zero

(d) Very high

Answer: (c)

72. 8085 is a _____ bit microprocessor.

(a) 8

(b) 16

(c) 24

(d) 64

Answer: (a)

73. The 8051 microcontrollers have how many pins?

(a) 38

(b) 35

(c) 40

(d) 50

Answer: (c)

74. Which of the following is NOT a type of electrical braking?

(a) Plugging

(b) Rheostatic braking

(c) Earth braking

(d) Regenerative braking

Answer: (c)

75. _____ states that an analog signal waveform may be uniquely reconstructed, without error, from samples taken at equal time intervals.

(a) Sampling Theorem

(b) Reciprocity Theorem

(c) Norton's Theorem

(d) Maxwell's Theorem

Answer: (a)

76. According to sampling theorem, If B is the maxim frequency signal then samples should be taken at least at a rate of _____.

(a) 0

(b) B

(c) 2B

(d) B/2

Answer: (c)

77. _____ are the part of the electricity transmission and distribution system where the voltages are transformed to lower levels for distributing power to end – user.

(a) High Voltage Transmission Lines

(b) Low Voltage Distribution Lines

(c) Substations

(d) Generation Units

Answer: (c)

79. Refractive index of glass is '2.5', then calculate the Brewster's angle for it.

(a) 68.19 degree

(b) 67.19 degree

(c) 68.91 degree

(d) 64.19 degree

Answer: (a)

80. Newton's Ring method was used for determination of _____.
I. Wavelength of light
II. Radius of curvature of a Plano Convex lens III. Refractive index of liquid

(a) Only I

(b) Only II

(c) Only I and III

(d) I, II and III

Answer: (d)

81. _____ is based on the law of conservation of charge, which requires that the algebraic sum of charges within a system cannot change.

(a) Kirchhoff's current law

(b) Kirchhoff's voltage law

(c) Ohm's law

(d) Maxwell's law

Answer: (a)

82. The statement "Algebraic sum of currents at a node (or junction) is equal to zero" is given by which law?

(a) Ohm's Law

(b) Maxwell's Law

(c) Kirchoff's Current Law

(d) Kirchoff's Voltage Law

Answer: (c)

83. "If we consider two loops A and B of a rec[illegible] network N, and if an ideal voltage source, E, in loop A, produces a current I in loop B, then an identical source in loop B will produce the same current I in loop A." This statement is given by which theorem?

(a) Maxwell

(b) Superposition

(c) Reciprocity

(d) Thevenin

Answer: (c)

84. Which of the following is NOT CORRECT regarding limitations field control method?

(a) Speeds lower than the rated speed cannot be obtained because the field cannot be made any stronger.

(b) This control method is suited to applications needing speed reversal.

(c) Since the speed is inversely proportional to the flux/pole while the torque is directly proportional to it for a given armature current, it can cope with constant kW drives only where the load torque falls with speed.

(d) For motors requiring a wide range of speed control, the field ampere-turns are much smaller than the armature ampere-turns at high speeds causing extreme distortion of the flux density in the air-gap.

Answer: (b)

85. _____ reverse the direction of flow of current in each armature conductor when it passes through the M.N.A. to obtain continuous torque.

(a) Brush rings
(b) Commutator
(c) Stator
(d) Rotor

Answer: (b)

86. An electro-mechanical energy conversion device (electrical machine) that converts DC electrical energy or power into mechanical energy or power is called _____.

(a) DC motor
(b) DC generator
(c) AC motor
(d) Transformer

Answer: (a)

87. A single-phase transformer consists of _____ windings placed over a laminated silicon steel core.

(a) 2
(b) 4
(c) 8
(d) 10

Answer: (a)

88. _____ connects the rotating armature conducto ɔ the stationary external circuit through brushes in DC motor.

(a) Brush rings
(b) Commutator
(c) Stator
(d) Rotor

Answer: (b)

89. The decimal number 15 is written as _____ in hexadecimal.

(a) A
(b) D
(c) F
(d) C

Answer: (c)

90. Flip flop has how many stable states?

(a) 4
(b) 5
(c) 2
(d) 6

Answer: (c)

91. In torque slip characteristics of induction motor, the regenerative action of the machine when the rotor rotates in the forward direction, at a speed greater than synchronous speed is shown in which quadrant?

(a) First
(b) Second
(c) Third
(d) Fourth

Answer: (b)

92. In _____, the motor continues to be connected to the supply but is made to act as a generator.

(a) Plugging
(b) Rheostatic braking
(c) Dynamic braking
(d) Regenerative braking

Answer: (d)

93. Producers of motion are also known as _____.

(a) Prime movers
(b) Resistor
(c) Capacitor
(d) Rectifier

Answer: (a)

94. The retail consumer usually gets electric power _____ volts in India.

(a) 230
(b) 23
(c) 4400
(d) 200000

Answer: (a)

95. Only square matrix have a _____.

(a) determinant
(b) laplace
(c) tranjugate
(d) conjugate

Answer: (a)

96. What is the possible numbers of stereoisomers?

(a) 2 n
(b) 2 n+1
(c) 2 n+2
(d) 2 n−1

Answer: (a)

97. Which of the following is NOT a structural isomerism?

(a) Chain isomerism
(b) Position isomerism
(c) Functional group isomerism
(d) Normal isomerism

Answer: (d)

98. What is chiral carbon atom?

(a) One that is attached to four different atoms or groups
(b) One that is attached to three different atoms or groups
(c) One that is attached to polymers
(d) One that is attached to two different atoms or groups

Answer: (a)

99. The phenomenon of total internal reflection takes place when the angle of reflection becomes _____.

(a) 0 degree
(b) 45 degree
(c) 180 degree
(d) 90 degree

Answer: (d)

100. Schrodinger's equation is extremely useful for investigating various _____ problems.

(a) chemistry
(b) mathematical
(c) fluid mechanical
(d) quantum mechanical

Answer: (d)

101. The resistance of any material is inversely proportional to the _____.

(a) cross-sectional area
(b) length
(c) resistivity
(d) time

Answer: (a)

102. What is the unit of Inductance?

(a) Ohm
(b) Henry
(c) Farad
(d) Joule

Answer: (b)

103. Cables from 22,000 volts to 33,000 volts can be classified as _____.

(a) L.T. (Low Tension Cables)

(b) H.T. (High Tension Cables)

(c) S.T. (Super Tension Cables)

(d) Extra High Tension Cables

Answer: (c)

104. Two coils connected in series have a equivalent resistance of 16 Ω and when connected in parallel have a equivalent resistance of 4 Ω. Find the value of resistances.

(a) R1 = 8 Ω, R2 = 8 Ω

(b) R1 = 16 Ω, R2 = 4 Ω

(c) R1 = 16 Ω, R2 = 16 Ω

(d) R1 = 4 Ω, R2 = 4

Answer: (a)

105. A current of 69 A is shared by three resistances in parallel. The wires are of the same material and have their lengths in the ratio 4 : 3 : 2 and their cross sectional areas in the ratio 3 : 2 : 1. Determine current in each resistance.

(a) 27 A, 24 A, 18 A

(b) 27 A, 24 A, 25 A

(c) 24 A, 25 A, 29 A

(d) 24 A, 18 A, 24 A

Answer: (a)

106. What would be the value of slip if sync. speed = 200 rpm and rotor speed = 150 rpm.

(a) 0.25

(b) 0.5

(c) 0.75

(d) 0.89

Answer: (a)

107. A (contravariant/covariant) vector is a tensor of rank _____.

(a) zero

(b) one

(c) two

(d) three

Answer: (b)

109. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): Bending moment may be defined as "the sum of moments about that section of all external forces acting to one side of that section".
Reason (R): Moments, at any point, are calculated by multiplying the magnitude of the external forces (loads or reactions) by the distance between the point at which moment is being determined and the point at which the external forces (loads or reactions) are being applied.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (a)

110. An electric iron draws 2 A at 120 V. Find its resistance.

(a) 120 Ω

(b) 12 Ω

(c) 60 Ω

(d) 700 Ω

Answer: (c)

111. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): Nodal analysis provides a general procedure for analyzing circuits using node voltages as the circuit variables.
Reason (R): Choosing node voltages instead of eleme voltages as circuit variables is convenient and reduces the number of equations one must solv multaneously.

(a) Both A and R is true, and R is the correct ex nation of A.

(b) Both A and R is true, and R is not th xplanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (b)

112. A synchronous motor starting on induction principle by means of damper winding is called a _____.

(a) synchronous motor

(b) induction motor

(c) resistive motor

(d) synduction motor

Answer: (d)

113. When both direction of flux or magnetic field and the direction of flow of current in the armature conductors are reversed the direction of torque _____.

(a) gets reversed

(b) remains same

(c) drops to zero

(d) increases

Answer: (b)

114. In a EX-OR gate if both the inputs are 0 the output will be _____.

(a) 0
(b) 1
(c) 10
(d) 01

Answer: (a)

115. What is the Laplace transform of e at ?

(a) 1/(s – a)
(b) 1/s
(c) 1/a
(d) 1 + s

Answer: (a)

117. The total _____ offered to the flow of alternating current by a circuit is called impedance.

(a) equilibrium
(b) sum
(c) opposition
(d) zero

Answer: (c)

118. What is the relation between Impedance (Z) and ı ittance (Y)?

(a) Z = Y
(b) Y = 1/Z
(c) Y + Z = 1
(d) Y – Z = 1

Answer: (b)

119. Diagonal elements of the skew matrix are all _____.

(a) one
(b) zero
(c) two
(d) four

Answer: (b)

120. Eigen vector cannot correspond to _____ distinct characteristic values.

(a) zero
(b) one
(c) two
(d) three

Answer: (c)

121. The dual of Thevenin's theorem is known as _____.

(a) Superposition Theorem

(b) Reciprocity Theorem

(c) Norton's Theorem

(d) Maxwell's Theorem

Answer: (c)

122. For beams spanning between two simple pin-jointed supports (i.e. no cantilevers) moment will be _____.
I. positive
II. negative

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (a)

123. Which of the following pair of theorem and its explanation is correct?
I. Thevenin's theorem - states that a linear two-terminal circuit can be replaced by an equivalent circuit consisting of a voltage source V in series with a resistor R , where V is the open-circuit Th Th Th
voltage at the terminals and R is the input or equivalent resistance at the terminals when the Th independent sources are turned off.
II. Superposition theorem - states that in any linear, active, bilateral network having more than one source, the response across any element is the algebraic sum of the responses obtained from each source considered separately, with all other sources replaced by their internal resistance.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (c)

124. Which of the following pair of DC motor component and its description correct?
I. Commutator - reverse the direction of flow of current in each armature conductor when it passes through the M.N.A. to obtain continuous torque.
II. Shaft torque - the actual torque available at the shaft for doing useful mechanical work is known as shaft torque.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (c)

125. The direction of electromagnetic torque developed in the armature depends upon the direction of _____.

(a) flux
(b) charge
(c) friction
(d) torque

Answer: (a)

126. The ratio of secondary voltage to primary voltage is called _____ of the transformer.

(a) voltage transformation ratio
(b) turn ratio
(c) armature ratio
(d) current ratio

Answer: (a)

127. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): D-type flip flop has 3 inputs.
Reason (R): J-K type flip flop has 2 inputs.

(a) Both A and R is true, and R is the correct explanation of A.
(b) Both A and R is true, and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Answer: (d)

128. The _____ is the cosine of the phase difference between voltage and current. It is also the cosine of the angle of the load impedance.

(a) Power factor
(b) Resonance
(c) Admittance
(d) Apparent power

Answer: (a)

129. Which of the following pair of control system and its description correct?
I. Open loop system – no feedback present
II. Closed loop system – feedback is present

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

Answer: (c)

130. _____ measures system output signal y(t) and produces feedback signal b(t) which is a function of y(t).

(a) Feedback Signal

(b) Error Detector

(c) Feedback Element

(d) Reference Input Signal

Answer: (c)

132. Which of the following pair of description correct for 8051 microcontrollers?
I. Registers – 2 - 16-bit registers
II. Number of pins – 40

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (c)

133. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): In Immediate Addressing Mode, the data is provided in the instruction itself.
Reason (R): In 8051, there is no instruction like MOVR5, R7. But we can get the same result by using this instruction MOV R5, 07H, or by using MOV 05H, R7.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (a)

134. Varying the time period T and keeping either t fixed or t fixed in chopper is known as _____. on off

(a) Frequency modulation

(b) Pulse modulation

(c) Width modulator

(d) Amplitude modulator

Answer: (a)

135. _____ carries power from DSS at 400 V (230 V single-phase) to various consumers through service lines and cables.

(a) Sub-transmission

(b) Grid Substation (GSS)

(c) Power Sub-Transmission (PSS)

(d) Secondary Distribution Network

Answer: (d)

136. Which of the following pair of signals and its description correct?
I. Analog signal – high distortion due to noise II. Digital signal – free from noise

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (c)

138. Verify Euler's theorem for the function.
F(x, y) = bx 2 + 2jxy + cy 2

(a) Follows the Euler's theorem

(b) Not follows the Euler's theorem

(c) Data missing in the function

(d) Irrelevant function

Answer: (a)

139. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): During corrosion more than one oxidation reaction may occur.
Reason (R): During the corrosion of an alloy its component metal atoms go into solution as their respective ions. Thus during the corrosion of a chromium-iron alloy both are oxidized.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (a)

142. If I = 10 A and V = 20 V, what will be the value of resistance?

(a) 2 Ohm

(b) 20 Ohm

(c) 200 Ohm

(d) 0.5 Ohm

Answer: (a)

143. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): Transformers are extensively used in AC power systems.
Reason (R): To change the level of voltage and current in electric power systems.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (a)

144. The algebraic sum of the loads to the left or right of a point (such that the addition of this force restores vertical equilibrium) is known as _____.

(a) shear force
(b) cantilever
(c) strain
(d) friction

Answer: (a)

145. One tesla is equal to how many gauss?

(a) 10 4
(b) 10 10
(c) 10 8
(d) 10 14

Answer: (a)

146. Core-type transformers are more suited for _____.

(a) high voltage transformers
(b) low voltage transformers
(c) very low voltage transformers
(d) core with three limbs

Answer: (a)

147. The outer stationary part of the DC machine is c d _____.

(a) stator
(b) rotor
(c) brush rings
(d) carbon plates

Answer: (a)

148. Which of the following is NOT a type of concentric winding?

(a) Spiral windings
(b) Helical winding
(c) Crossover winding
(d) Rectangular winding

Answer: (d)

149. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): three phase induction motors are the most used motors.
Reason (R): Almost more than 90 percent of the mechanical power used in industry is provided by three phase induction motors.

(a) Both A and R is true, and R is the correct explanation of A.
(b) Both A and R is true, and R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

Answer: (b)

150. Convert the hexadecimal number 13F into decimal.

(a) 219

(b) 319

(c) 519

(d) 445

Answer: (b)

151. Which of the following pair of electronic components and its description correct?
I. Counter - A circuit used for counting the pulses is known as a counter.
II. TTL logic – NAND gate is the basic TTL logic circuit.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (c)

153. Shifting a summing point beyond a block of gain G requires the insertion of _____ in the variable A
added.

(a) G A

(b) –(G) A

(c) 0

(d) 1/G A

Answer: (a)

154. Which of the following pair of load torque classification and its example correct?
I. Continuous and constant load – centrifugal pumps operating under same condition for a long time
II. Pulsating loads – textile looms

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (c)

155. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): flywheel does not exercise any control over mean speed of the engine.
Reason (R): flywheel which minimizes fluctuations of speed within the cycle but it cannot minimize fluctuations due to load variation.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (b)

156. To minimize fluctuations in the mean speed which may occur due to load variation _____ is used.

(a) Transformer
(b) Chopper
(c) Governor
(d) Rectifier

Answer: (c)

159. Which of the following is correct?
I. Gases have higher entropies than liquids.
II. If system absorbs heat, entropy increases and vice-versa.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

Answer: (c)

160. Which of the following analytical technique is used to evaluate the structure of carbon compounds?

(a) Nuclear magnetic resonance
(b) Simple magnetic resonance
(c) Spectroscopy
(d) Carbon magnetic resonance

Answer: (a)

161. KCL is based on the _____.

(a) conservation of energy
(b) conservation of charge
(c) conservation of force
(d) conservation of time

Answer: (b)

162. Quantities which are specified by a magnitude and a direction in space are called _____.

(a) vector
(b) scalar
(c) tensor
(d) fluid

Answer: (a)

163. Gyroscope is a device used for measuring or maintaining orientation and _____.

(a) Angular velocity
(b) Power
(c) Torque
(d) Energy

Answer: (a)

164. 'The power transferred by a source to the load resistance is maximum when the load resistance is equal to the internal resistance of the source.' this statement is given by which theorem?

(a) Maxwell
(b) Superposition
(c) Maximum power transfer
(d) Thevenin

Answer: (c)

166. The _____ is the product of the rms values of voltage and current.

(a) apparent power
(b) effective power
(c) minimum power
(d) maximum power

Answer: (a)

168. Convert (1001110) to its octal equivalent.
2

(a) (116) 8
(b) (16) 8
(c) (216) 8
(d) (6) 8

Answer: (a)

169. In a J-K Flip flop if J = K then the flip f is re red to as _____.

(a) D Flip flop
(b) B Flip flop
(c) T Flip flop
(d) E Flip flop

Answer: (c)

170. The ratio of the Laplace transform of the output variable to the Laplace transform of the input variable is known as _____.

(a) Transfer function
(b) Feedback function
(c) Laplace function
(d) Block function

Answer: (a)

171. If the result of an operation is _____, the zero flag is set, otherwise it is reset.

(a) 0
(b) 1
(c) 15
(d) 2

Answer: (a)

172. Which of the following is NOT a part of microprocessor?

(a) ALU

(b) Address bus

(c) Microcontroller

(d) Flags

Answer: (c)

173. A chopper is a _____ convertor.

(a) AC to DC

(b) DC to AC

(c) AC to AC

(d) DC to DC

Answer: (d)

174. Huygen's principle used to determine shape of which of these?

(a) wave front

(b) time period

(c) frequency

(d) amplitude

Answer: (a)

175. Taylor's theorem is important tool which provide __ approximation of real valued functions.

(a) polynomial

(b) double

(c) triple

(d) single

Answer: (a)

176. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): Determinant of A = product of eigen value of A.
Reason (R): If the value of A is real. Its eigen values are real or complex conjugate in pairs.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (b)

177. Which of the following is the application of schrodinger equation?
I. Particle in a box illustrating energy quantization.
II. Particle in a box illustrating volume quantization.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

Answer: (a)

179. Entropy is a measure of _____ of a system.

(a) evenness

(b) randomness

(c) equalness

(d) equilibrium

Answer: (b)

180. _____ change is a state function and is related to enthalpy change, entropy change and temperature.

(a) Free energy

(b) Equal energy

(c) Dual energy

(d) Single energy

Answer: (a)

181. When 3-phase supply is given to a 3-phase wound stator, a resultant field is produced which revolves at a constant speed, called _____.

(a) synchronous speed

(b) asynchronous speed

(c) squirrel speed

(d) induction speed

Answer: (a)

183. Moment of inertia tensor is a tensor of rank __ .

(a) zero

(b) one

(c) two

(d) three

Answer: (c)

184. A _____ is the point of connection between two or more branches.

(a) node

(b) mesh

(c) branch

(d) root

Answer: (a)

185. The _____ of a periodic signal is its root mean square (rms) value.

(a) effective value

(b) total value

(c) minimum value

(d) maximum value

Answer: (a)

186. A flip flop is also referred as _____ register.

(a) 1 bit

(b) 10 bits

(c) 100 bits

(d) 64 bits

Answer: (a)

187. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): feedback is used in increasing sensitivity.
Reason (R): feedback can be positive or negative.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

Answer: (d)

188. The 8086 microprocessor has a memory of _____.

(a) 1 MB

(b) 10 MB

(c) 1 byte

(d) 1 KB

Answer: (a)

190. In regenerative braking, the motor continues to connected to the supply but is made to act as a _____.

(a) motor

(b) transformer

(c) rectifier

(d) generator

Answer: (d)

192. System that generates, transmits, and distributes electric power to the end user are known as _____.

(a) Power system

(b) Transmission system

(c) Generating system

(d) Industrial system

Answer: (a)

193. According to sampling theorem the sampling rate must be equal to, or greater than _____ the highest frequency component in the analog signal.

(a) twice
(b) thrice
(c) quadruple
(d) octuple

Answer: (a)

194. _____ represents an operational method for solving linear difference equations and linear control systems with digital data.

(a) z-transform
(b) t-transform
(c) laplace-transform
(d) gaussian-transform

Answer: (a)

195. The phenomenon of _____ is an illustration of light waves reflected from the opposite surfaces of a thin film of variable thickness.

(a) Newton's ring
(b) Bohr model
(c) Brewster's angle
(d) Huygen's principle

Answer: (a)

196. Which of the following pair is correct?
I. Michelson's Interferometer – Based upon p[illegible] of Interference.
II. Total Internal Reflection – Optical fibre uses this principle for signal transmission.
III. Reflecting Telescope – Telescope with mirror objectives.

(a) Only I
(b) Only I and III
(c) Only I and II
(d) I, II and III

Answer: (d)

197. Which of the following integrals are known as 'Beta and Gama functions'?

(a) I and II Eulerian Integrals
(b) Only I Eulerian Integrals
(c) Definite integrals
(d) Indefinite Integrals

Answer: (a)

198. Which of the following pair is correct?
I. Commutative law – A + B = B + A II. Associative law – (A + B) + C = A + (B + C) III. Addition – A + B = [a + b] ij ij mxn

(a) Only I

(b) Only II

(c) Only I and III

(d) I, II and III

Answer: (d)

Answer key

Answer key from the Delhi Subordinate Services Selection Board's official answer key for this sitting. "—" means the key gave none.

General

1	**(d)**	2	**(b)**	4	**(a)**	5	**(a)**	6	**(a)**	7	**(b)**
9	**(b)**	10	**(b)**	12	**(c)**	13	**(d)**	14	**(a)**	15	**(b)**
16	**(a)**	17	**(a)**	18	**(a)**	20	**(a)**	21	**(c)**	22	**(a)**
23	**(a)**	24	**(a)**	25	**(c)**	26	**(a)**	27	**(a)**	28	**(a)**
29	**(a)**	30	**(b)**	31	**(a)**	32	**(a)**	33	**(b)**	34	**(b)**
35	**(a)**	36	**(a)**	37	**(a)**	38	**(a)**	39	**(c)**	40	**(c)**
41	**(a)**	42	**(d)**	43	**(b)**	44	**(b)**	45	**(a)**	46	**(b)**
47	**(a)**	48	**(b)**	49	**(c)**	50	**(a)**	51	**(a)**	52	**(d)**
55	**(a)**	56	**(b)**	57	**(c)**	58	**(a)**	59	**(d)**	60	**(a)**
61	**(a)**	62	**(c)**	63	**(c)**	64	**(a)**	65	**(a)**	66	**(a)**
67	**(a)**	68	**(d)**	69	**(a)**	70	**(d)**	71	**(c)**	72	**(a)**
73	**(c)**	74	**(c)**	75	**(a)**	76	**(c)**	77	**(c)**	79	**(a)**
80	**(d)**	81	**(a)**	82	**(c)**	83	**(c)**	84	**(b)**	85	**(b)**
86	**(a)**	87	**(a)**	88	**(b)**	89	**(c)**	90	**(c)**	91	**(b)**
92	**(d)**	93	**(a)**	94	**(a)**	95	**(a)**	96	**(a)**	97	**(d)**
98	**(a)**	99	**(d)**	100	**(d)**	101	**(a)**	102	**(b)**	103	**(c)**
104	**(a)**	105	**(a)**	106	**(a)**	107	**(b)**	109	**(a)**	110	**(c)**
111	**(b)**	112	**(d)**	113	**(b)**	114	**(a)**	115	**(a)**	117	**(c)**
118	**(b)**	119	**(b)**	120	**(c)**	121	**(c)**	122	**(a)**	123	**(c)**
124	**(c)**	125	**(a)**	126	**(a)**	127	**(d)**	128	**(a)**	129	**(c)**
130	**(c)**	132	**(c)**	133	**(a)**	134	**(a)**	13	**(d)**	136	**(c)**
138	**(a)**	139	**(a)**	142	**(a)**	143	**(a)**	144	**(a)**	145	**(a)**
1	**(a)**	147	**(a)**	148	**(d)**	149	**(b)**	150	**(b)**	151	**(c)**
153	**(a)**	154	**(c)**	5	**(b)**	156	**(c)**	159	**(c)**	160	**(a)**
161	**(b)**	162	**(a)**	163	**(a)**	164	6	**(a)**	168	**(a)**	169
(c)	170	**(a)**	171	**(a)**	172	**(c)**	173	**(d)**	174	**(a)**	175
(a)	176	**(b)**	177	**(a)**	179	**(b)**	180	**(a)**	181	**(a)**	183
(c)	184	**(a)**	185	**(a)**	186	**(a)**	187	**(d)**	188	**(a)**	190
(d)	192	**(a)**	193	**(a)**	194	**(a)**	195	**(a)**	196	**(d)**	197
(a)	198	**(d)**									