[SET-III]

GROUP: ELECTRICAL, ELECTRONICS & COMPUTER

Time: 2:30 hours

Marks: 150

NOTE:

(i) Attempt all questions. Each question carries ONE mark. There will be negative marking. Every wrong answer will result In deduction of 1/4 marks.

(ii) There are 150 questions In this booklet. Against each question four alternative choices (A), (B), (C) and (D) are given, out of which only one is correct. Indicate your choice of answer by Darkening the suitable circle with Black/Blue Ball Pen In the OMR answer sheet supplied to you separately.

[ENGLISH/GK/MENTAL APTITUDE]

1. Maximum Oxygen is available from
   (A) Deserts
   (B) Green Forests
   (C) Grass Lands
   (D) Phytoplanktons

2. Which of the following is a renewable resource?
   (A) Coal
   (B) Mineral Oil
   (C) Natural Gas
   (D) Forests

3. Which of the following countries Is fast moving towards a cashless economy?
   (A) Denmark
   (B) Sweden
   (C) Iceland
   (D) Norway

4. Which country recently detonated its first hydrogen bomb?
   (A) South Korea
   (B) North Korea
   (C) Pakistan
   (D) Iran

5. Which city will host the 2022 Asian Games?
   (A) Manila
   (B) Hangzhou
   (C) Sana
   (D) Osaka

6. Who among the following is the first Indian woman mountaineer to reach the summit of Mount Everest?
   (A) Premlata Agarwal
   (B) Arunima Sinha
   (C) Bachendri Pal
   (D) Tashi Malik

7. Whose army did Alexander, the Greek ruler confront on the banks of the river Jhelum?
   (A) Chandragupta Maurya
   (B) Ambi
   (C) Dhanananda
   (D) Porus

8. In EMI, 'E' stands for
   (A) Earned
   (B) Economics
   (C) Easy
   (D) Equated

9. Who propounded the theory of 'Economic Drain of India' during British Imperialism?
   (A) W. C. Bannerji
   (B) Dadabhai Naoroji
   (C) Gopalkrishna Gokhale
   (D) Gandhiji

10. The Election Commissioner can be removed by the
    (A) Chief Election Commissioner
    (B) Prime Minister
    (C) President on the recommendation of the Chief Election Commissioner
    (D) Chief Justice of India

3

11. Consider the following events connected with Indian National Movement and find the correct chronological order of the events from the codes given below

    i. Demise of B. G. Tilak
    ii. Passing of Rowlatt Bill as an Act
    iii. Jalianwala Bagh Massacre
    iv. Amritsar Session of Indian National Congress, 1919

    Codes
    (A) ii, iii, iv, i
    (B) iv, iii, ii, i
    (C) iii, iv, ii, i
    (D) i, ii, iii, iv

12. If H = 8, HE = 13, Then 'HEN' will be equal to
    (A) 22
    (B) 24
    (C) 25
    (D) 27

In each of the following Questions, an idiomatic expression/ a proverb has been given, followed by some alternatives. Choose the one which best expresses the meaning of given idiom/proverb

13. A pipe dream
    (A) A pleasant dream
    (B) A bad dream
    (C) An impracticable plan
    (D) A foolish idea

14. To spill the beans
    (A) To reveal secret information
    (B) To misbehave
    (C) To keep secrets
    (D) To talk irrelevant

Fill in the blanks with suitable tense from the alternatives in the following questions:

15. _____ adequate pre-emptive action to avert this tragedy?
    (A) Would you not be taking
    (B) Would you have not taken
    (C) Shall you not have Taken
    (D) Should you not have taken

16. Had she known about it, she _____ have stayed longer.
    (A) would
    (B) might
    (C) may
    (D) should

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.

17. The Sage said, "God helps those who help themselves."
    (A) The Sage said that God helps those who help themselves.
    (B) The Sage said that God helped those who helped themselves
    (C) The Sage said that God helps those who helped themselves
    (D) The Sage said that God helped those who help themselves

18. He asked his teacher, "Need I read this chapter?"
    (A) He asked his teacher whether there was a need to read that chapter.
    (B) He asked his teacher whether there he needed to read this chapter.
    (C) He asked his teacher if it was necessary to read this chapter.
    (D) He asked his teacher if he had to read that chapter.

Fill in the blanks with suitable words from the alternatives in the following questions:

19. If you drink too much, it will _____ your judgement.
    (A) Impede
    (B) Impair
    (C) impose
    (D) impel

20. The Chairman treated the employees to a _____ lunch at an expensive hotel.
    (A) precious
    (B) sumptuous
    (C) thriving
    (D) stupendous

4

[CHEMISTRY]

21. Which of the following has highest mass.
    (A) 50 gm Iron
    (B) 5 moles of N_2
    (C) 0.1 mol atom of Ag
    (D) 10^{23} atoms of carbon

22. The oxidation number of osmium in OsO_4 is
    (A) +7
    (B) +5
    (C) +4
    (D) +8

23. An oxide of metal (M) has 40% by mass of oxygen. If, the atomic mass of M is 24, the empirical formula of its oxide will be?
    (A) M_2O
    (B) M_2O_3
    (C) MO
    (D) M_3O_4

24. Which of the following ions has the smallest radius?
    (A) Li^+
    (B) Na^+
    (C) Be^{2+}
    (D) K^+

25. Which of the following elements show zero valency?
    (A) Pt
    (B) Au
    (C) S
    (D) Ne

26. The atomic numbers of vanadium (V), chromium (Cr), manganese (Mn) and iron (Fe) are 23, 24, 25 and 26 respectively. Which of these will show the highest 2nd ionization enthalpy ?
    (A) Fe
    (B) V
    (C) Cr
    (D) Mn

27. BCl_3 molecule is planer whereas NCl_3 is pyramidal because
    (A) B-Cl bond is more polar than N-Cl bond
    (B) N-Cl bond is more covalent than B-Cl bond

(C) Nitrogen atom is smaller than boron atom
(D) BCl_3 has no lone pair of electrons whereas NCl_3 has one lone pair of electrons

28. Which of the following has the highest dipole moment?
    (A) AsH_3
    (B) SbH_3
    (C) PH_3
    (D) NH_3

29. The hybridization of carbon in 1,3-butadiene is
    (A) sp
    (B) sp^3
    (C) sp^2
    (D) sp^2 and sp^3

30. If A= tetracyanomethane; B= CO_2; C= benzene; D= 1,3-butadiene. The ratio of σ and π bonds will be in the order
    (A) A=B<C<D
    (B) A=B<D<C
    (C) A=B=C=D
    (D) C<D<A<B

31. The frequency of a wave of light is 12 x 10^{14} s^{-1}. The wave number associated with this light is
    (A) 5×10^{-7} m
    (B) 4×10^{-8} cm^{-1}
    (C) 2×10^{-7} m^{-1}
    (D) 4×10^4 cm^{-1}

32. An electron jumps from 6th energy level to 3rd energy level in H-atom. How many lines belong to the visible region?
    (A) 1
    (B) 2
    (C) 3
    (D) zero

33. The orbital angular momentum for a d-electron is
    (A) $\sqrt{6}$ (h/2π)
    (B) $\sqrt{2}$ (h/2π)
    (C) (h/2π)
    (D) zero

5

34. The number of nodal planes in a p_x orbital is
    (A) 1
    (B) 2
    (C) 3
    (D) zero

35. Which of the following has maximum number of unpaired electrons (At. no. of Fe = 26)?
    (A) Fe
    (B) Fe (II)
    (C) Fe (III)
    (D) Fe (IV)

[PHYSICS]

36. A particle revolves around a circular path. The acceleration of the particle is
    (A) along the circumference of the circle
    (B) along the tangent
    (C) along the radius
    (D) zero

37. A heavy and a light body have equal kinetic energies. Which one has a greater momentum?
    (A) Light body
    (B) heavy body
    (C) both have equal momentum
    (D) Information is insufficient

38. Cream gets separated out of milk when it is churned, it is due to
    (A) Gravitational force
    (B) Centripetal force
    (C) Centrifugal force
    (D) Frictional force

39. Torque is analogous to force, and moment of inertia is analogous to
    (A) mass
    (B) B momentum
    (C) impulse
    (D) none of these

40. The radius of gyration is independent of the
    (A) location of axis of rotation
    (B) distribution of mass
    (C) shape of body
    (D) mass of body

41. The moment of inertia of a thin uniform circular disc about one of its diameter is J. The moment of inertia about an axis perpendicular to the circular surface and passing through its center is
    (A) $(2J)^{1/2}$
    (B) $2J$
    (C) $J/2$
    (D) $J/(2)^{1/2}$

42. In the equation, pV=RT, V stands for the volume of
    (A) any amount of gas
    (B) one gram of gas
    (C) one gram molecule of gas
    (D) one liter of gas

43. A gas behaves as an ideal gas at
    (A) very low pressure and high temperature
    (B) high pressure and low temperature
    (C) high pressure and high temperature
    (D) low pressure and low temperature

44. If p is the pressure of the gas then kinetic energy per unit volume of the gas is
    (A) p/2
    (B) p
    (C) 3p/2
    (D) 2p

45. Angular momentum is
    (A) scalar
    (B) an axial vector
    (C) a polar vector
    (D) none of these

46. Energy of electromagnetic waves is due to their
    (A) Wavelength
    (B) frequency
    (C) electric and magnetic field
    (D) none of these

47. Out of the following phenomena, the one which cannot be explained on the basis of wave theory is
    (A) Polarization
    (B) Diffraction
    (C) Photoelectric effect
    (D) Interference

6

48. The difference between soft and hard X-rays is of
    (A) velocity
    (B) frequency
    (C) intensity
    (D) polarization

49. Nuclear fusion requires high temperature because
    (A) all nuclear reactions absorb heat
    (B) particles cannot come closer unless they are moving rapidly
    (C) binding energy must be supplied from an external source
    (D) mass deficit must be supplied

50. If the radiation from a radioactive material is passed through an electric field
    (A) all the three kind of rays will be deflected
    (B) only gamma ray is deflected
    (C) only alpha and beta rays are deflected
    (D) only the alpha ray is deflected

[MATHEMATICS]

51. The value of k, so that the equation $2x^2 + kx - 5 = 0$ and $x^2 - 3x - 4 = 0$ may have one root in common is
    (A) -6
    (B) $-27/4$
    (C) 6
    (D) None of the above.

52. If each term of an infinite G. P. is twice the sum of terms following it, then the common ration of G. P. is
    (A) $1/3$
    (B) 3
    (C) 2
    (D) None of the above.

53. The sum of n terms of the series $1^2 + 3^2 + 5^2 + \cdots$ is
    (A) $\frac{n(n+1)(2n+1)}{6}$
    (B) $\frac{n(4n-1)(2n-1)}{3}$
    (C) $\frac{n(2n-1)(2n+1)}{3}$
    (D) None of the above.

54. General solution of the equation $\tan 5A = \cot 2A$ is
    (A) $A = \frac{n\pi}{7} + \frac{\pi}{2}$
    (B) $A = \frac{n\pi}{7} - \frac{\pi}{14}$
    (C) $A = \frac{n\pi}{7} + \frac{\pi}{14}$
    (D) None of the above.

55. If $\cos x = -1/3$ and x lies in third quadrant, then $\sin x/2$ is equal to
    (A) $\sqrt{\frac{2}{3}}$
    (B) $\frac{\sqrt{2}}{3}$
    (C) $-\frac{\sqrt{2}}{3}$
    (D) None of the above.

56. First negative term in the expansion $(1+x)^{7/2}$ is
    (A) 5th term
    (B) 6th term
    (C) 7th term
    (D) None of the above.

57. $\tan^{-1}\left(\frac{x}{y}\right) - \tan^{-1}\left(\frac{x-y}{x+y}\right)$ is equal to
    (A) $\frac{\pi}{2}$
    (B) $\frac{\pi}{3}$
    (C) $\frac{\pi}{4}$
    (D) None of the above.

58. The area of a triangle formed by co-ordinate axes and a line is 6 square units and the length of hypotenuse is 5 units. Equation of the line is
    (A) $3x - 4y = 12$
    (B) $3x + 4y = 12$
    (C) $3x + 2y = 6$
    (D) None of the above.

59. The angle between the lines $x = a$ and $by + c = 0$ is
    (A) $\frac{\pi}{2}$
    (B) $0°$
    (C) $\frac{\pi}{4}$
    (D) None of the above.

60. The tangents to the circle $x^2 + y^2 = 169$ at the points (5, 12) and (12, –5) are.
    (A) parallel
    (B) perpendicular
    (C) coincident
    (D) None of the above.

61. The equation of directrix of parabola $y^2 + 4y + 4x + 2 = 0$ is
    (A) $x = -1$
    (B) $x = 1$
    (C) $x = -3/2$
    (D) $x = 3/2$.

62. If $f(x) = \begin{cases} k\frac{\sin x}{x} + \cos x, & x \le 0, \\ 4\left(\frac{1-\sqrt{1-x}}{x}\right), & x > 0 \end{cases}$ is
    continuous at $x = 0$, then the value of k is
    (A) 1
    (B) 3
    (C) –1
    (D) None of the above.

63. The value of $\frac{d}{dx}(\cos^{-1}(\sin x))$ is equal to
    (A) –1
    (B) 1
    (C) $\frac{\pi}{2}$
    (D) None of the above.

64. If $e^x + e^y = e^{x+y}$, then $\frac{dy}{dx}$ at (2,2) is
    (A) 2
    (B) 1
    (C) –1
    (D) None of the above.

65. The real number x when added to its inverse gives the minimum value of the sum at x equal to
    (A) 1
    (B) –1
    (C) –2
    (D) 2.

66. The normal to the curve $x = a(1 + \cos\theta), y = a\sin\theta$ at a point θ always passes through the fixed point
    (A) (a,0)
    (B) (0,a)
    (C) (0,0)
    (D) (a,a).

67. The value of $\int$ ___ dx is equal to
    (A) ?
    (B) ?
    (C) ?
    (D) ?

68. The ___ equation ___
    (A) v?
    (B) e
    (C) e^2
    (D) $e - 1$

69. $\int \sec^3\theta\, d\theta$ is equal to
    (A) $\frac{1}{2}(\sec\theta\tan\theta + \log|\sec\theta + \tan\theta|) + c$
    (B) $\sec\theta\tan\theta + \log |\sec\theta + \tan\theta|$
    (C) $\frac{1}{3}(\sec\theta\tan\theta + \log|\sec\theta + \tan\theta|) + c$
    (D) None of the above.

70. If the roots of the equation $c) x^2 + (c - a) x + (a - b) = $ ___ equal, then a, b and c are in
    (A) A.P.
    (B) G.P.
    (C) H.P.
    (D) None of these.

[ELECTRICAL, ELECTRONICS & COMPUTER]

71. A system program that combines the separately compiled modules of a program into a form suitable for execution
    (A) Assembler.
    (B) Linking loader.
    (C) Cross compiler
    (D) Load and go.

72. The strategy of allowing processes that are logically runnable to be temporarily suspended is called
    (A) Preemptive scheduling
    (B) Non preemptive scheduling
    (C) Shortest job first
    (D) First come first served

8

73. Which of the following functions Is(are) performed by the loader
   (A) Allocate space in memory for the programs and resolve symbolic references between object decks
   (B) Adjust all address dependent locations, such as address constants, to correspond to the allocated space.
   (C) Physically place the machine instructions and data into memory.
   (D) All of the above

74. The register or main memory location which contains the effective address of the operand is known as
   (A) Pointer
   (B) Indexed register
   (C) Special location
   (D) Scratch pad

75. Fragmentation of the file system
   (A) Occurs only if the file system is used improperly
   (B) Can always be prevented
   (C) Can be temporarily removed by compaction
   (D) Is a characteristic of all file systems

76. Bug means
   (A) A logical error in a program
   (B) A difficult syntax error in a program
   (C) Documenting programs using an efficient documentation tool .
   (D) All of the above

77. An algorithm is best described as
   (A) A computer language
   (B) A step by step procedure for solving a problem
   (C) A branch of mathematics
   (D) All of the above

78. The process of transferring data Intended for a peripheral device into a disk (or intermediate store) so that it can be transferred to peripheral at a more convenient time or in bulk, is known as
   (A) Multiprogramming
   (B) Spooling
   (C) Caching
   (D) Virtual programming

79. The CPU, after receiving an Interrupt from an I/O device
   (A) Halts for a predetermined time
   (B) Hands over control of address bus and data bus to the interrupting device
   (C) Branches off to the interrupt service routine Immediately
   (D) Branches off to the Interrupt service routine after completion of the current instruction

80. What is the name of the technique in which the operating system of a computer executes several programs concurrently by switching back and forth between them?
   (A) Partitioning
   (B) Multitasking
   (C) Windowing
   (D) Paging

81. Which of the following is used for modulation and demodulation?
   (A) Modem
   (B) Protocols
   (C) Gateway
   (D) Multiplexer

82. The term 'duplex' refers to the ability of the data receiving stations to echo back a confirming message to the sender. In full duplex data transmission, both the sender and the receiver
   (A) Cannot talk at once
   (B) Can receive and send data simultaneously
   (C) Can send or receive data one at a time
   (D) Can do one way data transmission only

83. A distributed network configuration in which all data/information pass through a central computer is
   (A) Bus network
   (B) Star network
   (C) Ring network
   (D) Point-to-point network

84. Carrier is
(A) One or more conductors that serve as a common connection for a related group of devices
(B) A continuous frequency capable of being modulated or impressed with a second signal
(C) The condition when two or more sections attempt to use the same channel at the same time
(D) A collection of interconnected functional units that provides a data communications service among stations attached to the network

85. Any type of storage that is used for holding information between steps in its processing is
(A) CPU
(B) Primary storage
(C) Intermediate storage
(D) Internal storage

86. The section of the CPU that selects, interprets and sees to the execution of program instructions:
(A) Memory
(B) Register unit
(C) Control unit
(D) ALU

87. An on-line commercial site such as Amazon.com is an example of a(n)
(A) Single-user database application
(B) Multiuser database application
(C) E-commerce database application
(D) Data mining database application

88. SQL stands for _____.
(A) Structured Query Language
(B) Sequential Query Language
(C) Structured Question Language
(D) Sequential Question Language

89. The functional difference between SR flip-flop and JK flip-flop is that
(A) JK flip-flop is faster than SR flip-flop
(B) JK flip-flop has a feedback path
(C) JK flip-flop accepts both inputs 1
(D) JK flip-flop does not require external clock

90. In which code the successive code characters differ in only one bit position?
(A) Gray code
(B) Excess 3 code
(C) 8421 code
(D) Algebraic code

91. Which output device is used for translating information from a computer into pictorial form on paper.
(A) Mouse
(B) Plotter
(C) Touch panel
(D) Card punch

92. ASCII stands for
(A) American standard code for information interchange
(B) All purpose scientific code for information interchange
(C) American security code for information interchange
(D) American Scientific code for information interchange

93. A compiler means
(A) A person who compiles source programs
(B) The same thing as a programmer
(C) Keypunch operator
(D) A program which translates source program into object program

94. A _____ DBMS distributes data processing tasks between the workstation and a network server.
(A) Network
(B) Relational
(C) Client Server
(D) Hierarchical

95. An OR gate can be imagined as
(A) Switches connected in series
(B) Switches connected in parallel
(C) MOS transistors connected in series
(D) All of the above

96. De Morgan's theorem says that NAND gate is equivalent to a bubbled _____ gate.
(A) AND
(B) XAND
(C) XOR
(D) OR

10

97. Flip-flop outputs are always
   (A) Complimentary
   (B) The same
   (C) Independent of each other
   (D) Same as inputs

98. Digital design often starts by constructing a _____ table.
   (A) Standard
   (B) Two-stage
   (C) Truth
   (D) Two-dimensional

99. A diagram that illustrates the logic of functions in a program is called
   (A) Flowchart
   (B) Sequence of steps
   (C) Direction of flow
   (D) All of the above

100. The time required for a pulse to decrease from 90 to 10 percent of its maximum value is known as
   (A) Rise time
   (B) Decay time
   (C) Binary level transition period
   (D) Propagation delay

101. How many inputs signals can a gate have?
   (A) One
   (B) More than one
   (C) Two only
   (D) Both (A) and (B)

102. A combinational logic circuit which is used when it is desired to send data from two or more source through a single transmission line is known as
   (A) Encoder
   (B) Decoder
   (C) Multiplexer
   (D) Demultiplexer

103. A bus is a group of _____ carrying digital signals.
   (A) Wires
   (B) Gates
   (C) Transistors
   (D) Registers

104. Which of the following flip-flops is free from race around problem?
   (A) T flip-flop
   (B) SR flip-flop
   (C) Master slave JK flip-flop
   (D) All of the above

105. How many memory locations can 14 address bits access?
   (A) 16,384
   (B) 8,192
   (C) 4096
   (D) 14

106. The maximum number of TTL loads that a TTL device can drive reliably over the specified temperature range is
   (A) Fanout
   (B) Bipolar
   (C) Chip
   (D) Universal logic circuit

107. In an intrinsic semiconductor, the number of free electrons
   (A) Equals the number of holes
   (B) Is less than the number of holes
   (C) Is greater than the number of holes
   (D) Impossible to say

108. The total impedance of a parallel RLC circuit:
   (A) Always increases as the applied frequency increases
   (B) Is equal to the sum of the values of resistance, inductive reactance and capacitive reactance
   (C) Always decreases as the applied frequency increases
   (D) Is maximum at the resonant frequency

109. For a pure capacitor:
   (A) Ac current and voltage are exactly in phase
   (B) Ac current leads the voltage by 90 degree
   (C) Ac current is converted to dc voltage
   (D) Ac current lags the voltage by 90 degree

110. Waveforms are graphs that show:
   (A) Frequency on the vertical axis and amplitude on the horizontal axis

11

(B) Amplitude on the vertical axis and frequency on the horizontal axis

(C) Amplitude on the vertical axis and the passage of time on · the horizontal axis

(D) The passage of time on the vertical axis · and amplitude on the horizontal axis

111. A transformer has a primary voltage of 120 V rms and a secondary voltage of 25 V rms. If the secondary current is 1A rms, what is the primary current?

(A) 7.8 ma

(B) 208 ma

(C) 200 ma

(D) 300 ma

112. Which one of the following phrases most accurately describes a purely inductive circuit?

(A) Resistances provide the only opposition to current flow

(B) Inductive reactance provides the only opposition to current flow

(C) Combinations of resistance and inductive reactance provide any opposition to current flow

· (D) The ac voltage lags the current by 90 degree

113. The knee voltage of a diode is approximately equal to the

(A) Applied voltage

(B) Barrier potential

(C) Breakdown voltage

(D) Forward voltage ·

114. Which one of the following statements is true for the voltages in a series RC circuit?

(A) The total voltage is equal to the sum of the voltages across the resistance and capacitance

(B) The voltage always has the same amplitude and phase for every part of the circuit

(C) The total voltage is less than the sum of the voltages across the resistance and capacitance

(D) The total voltage is greater than the sum of the voltages· across the resistance and capacitance

115. What is the phase shift between total current and voltage in the circuit of a 100 ohm resistor connected in parallel with a capacitor that has a reactance of 100 ohm

(A) 180 degree

(B) 30 degree

(C) 45 degree

(D) 75 degree

116. In which of the following are operational amplifiers (op-amps) used?

(A) Oscillators

(B) Filters

(C) Instrumentation circuits

(D) All of the above

117. What is the level of the voltage between the input terminals of an op-amp?

(A) Virtually zero

(B) 5 V

(C) 18 V

(D) None of the Above

118. The maximum rate of change of the output voltage in response to a step input voltage is the _____ of an op-amp.

(A) Time constant

(B) Maximum frequency

(C) Slew rate

(D) Static discharge

119. The output voltage of a typical thermocouple is

(A) Less than 100 mv

(B) Greater than 1 V

(C) Thermocouples vary resistance, not voltage.

(D) None of the above

120. In A/D convertor, the change in value of an analog signal during the conversion process produces what is called the

(A) Quantization error

(B) Resolution error

(C) Nyquist error

(D) Sampling error

121. Which of the following performance specifications applies to a sample-and-hold circuit?
(A) Aperture time
(B) Aperture droop
(C) Feedback
(D) Acquisition jitter

122. A certain current source has the values $I_s = 4 \mu a$ and $R_s = 1.2$ M ohm. The values for an equivalent voltage source are
(A) 4.8 µv, 1.2 M ohm
(B) 1 V, 1.2 M ohm
(C) 4.8 V, 4.8 M ohm
(D) 4.8 V, 1.2 M ohm

123. In a two-source circuit, one source acting alone produces 12 ma through a given branch. The other source acting alone produces 10 ma in the opposite direction through the same branch. The actual current through the branch is
(A) 22 ma
(B) 12 ma
(C) 10 ma
(D) 2 ma

124. A 470 ohm R_L is connected across a voltage source, V_s, of 120 V. The source's internal resistance, R_s, is 12 ohm. What is the output voltage across the load?
(A) 120 V
(B) 0 V
(C) 117 V
(D) 12 V

125. In order to get maximum power transfer from a capacitive source, the load must
(A) Have a capacitive reactance equal to circuit resistance
(B) Have an impedance that is the complex conjugate of the source impedance
(C) Be as capacitive as it is inductive
(D) None of the above

126. The Norton equivalent current is
(A) The current through the load
(B) The open-current from the source
(C) The short circuit current
(D) None of the above

127. Increasing the number of turns of wire on the secondary of a transformer will
(A) Increase the secondary current
(B) Decrease the secondary current
(C) Have no effect on the secondary current
(D) Increase the primary current

128. If the primary power of an ideal transformer having a 2:1 voltage ratio is 100 W, the secondary power is
(A) 100 W
(B) 50 W
(C) 75 W
(D) 200 W

129. An ammeter of 0-25 A range has a guaranteed accuracy of 1% of full scale reading. The current measured is 5 A. The limiting error is
(A) 1%
(B) 0.2%
(C) 2.5%
(D) 5%

130. In a CRO which of the following is not a part of electron gun
(A) Cathode
(B) Grid
(C) Accelerating anode
(D) X - Y plates

131. A single phase energy meter has the rating 1200 revolutions/ kwh. If a 500 W electric gadget is used for 4 hours, the energy meter will make
(A) 1200 revolutions
(B) 1800 revolutions
(C) 2100 revolutions
(D) 2400 revolutions

132. A moving coil instrument has a resistance of 0.6 Ω and full scale deflection at 0.1 A. To convert it into an ammeter of 0-15 A range, the resistance of shunt should be
(A) 0.6 Ω
(B) 0.06 Ω
(C) 0.1 Ω
(D) 0.004 Ω

13

133. An LVDT is used to measure displacement. The LVDT feeds a Voltmeter of 0-5 V range through a 250 gain amplifier. For a displacement 0.5 mm the output of LVDT is 2 mv. The sensitivity of instrument is
(A) 0.1 V/mm
(B) 0.5 V/mm
(C) 1 V/mm
(D) 5 V/mm

134. The household energy meter is
(A) Indicating instrument
(B) Recording instrument
(C) Integrating instrument
(D) None of the above

135. Potentiometer method of dc voltage measurement is more accurate than direct measurement using a voltmeter because
(A) It loads the circuit to maximum extent
(B) It loads the circuit moderately
(C) It does not load the circuit at all
(D) It uses centre zero galvanometer instead of Voltmeters

136. Which of the following are needed both for protection and metering?
(A) Wattmeters
(B) Instrument transformers
(C) Energy meters
(D) Power factor meters

137. A voltmeter using thermocouples measures
(A) Rms value
(B) Peak value
(C) Average value
(D) Peak to peak value

138. Kelvin's double bridge is used to measure low resistances because
(A) It has high sensitivity
(B) There is no thermoelectric emf
(C) Resistance variation due to temperature
(D) Effect of contact and lead resistances is eliminated

139. The resistance of a 125 Ω strain gauge changes by 1 ohm for 4000 micro strain. The gauge factor is
(A) 1.5
(B) 2
(C) 2.5
(D) 3

140. Which of these has a magnetic brake?
(A) Thermocouple ammeter
(B) Energy meter
(C) Dynamometer wattmeter
(D) Frequency meter

141. In a digital measuring device the input electrical signal is in the frequency range of dc to ac (50) Hz. It must be sampled at a rate of
(A) F times/sec
(B) 0.5 f times/sec
(C) 0.25 f times/sec
(D) 2 f times/sec

142. When a capacitor is connected to the terminals of an ohmmeter, the pointer indicated a low resistance initially and finally come to infinity position. This shows that capacitor is
(A) Short circuited
(B) All right
(C) Faulty
(D) Open circuited

143. A capacitance transducer can be used to measure
(A) Thickness of sheet
(B) Displacement
(C) Level of fluids
(D) All of the above

144. The current through the coil of an electromagnet is doubled. The magnetic field around the coil
(A) Is halved
(B) Is doubled
(C) Becomes four times
(D) Remains the same

145. The wave applied to X plates, for obtaining trace of voltage wave, is
(A) Sawtooth wave
(B) Sinusoidal wave
(C) Rectangular wave
(D) None of the above

14

146. If a shunt of 200 Ω resistance is used with a galvanometer of 1000 Ω resistance, the multiplying power is
    (A) 6
    (B) 5
    (C) 1/5
    (D) 1/6

147. For measuring inductance with high Q, we should use
    (A) Maxwell's bridge
    (B) Maxwell Wien bridge
    (C) Hay's bridge
    (D) None of the above

148. The 10 mhz in the specification of CRO means that
    (A) The sweep frequency is 10 mhz
    (B) The frequency of input signal should not be more than 10 mhz
    (C) The vertical amplifier has been designed for 10 mhz
    (D) None of the above

149. In measurements using CRO, Lissajous patterns are used to
    (A) Measure magnitude of peak voltage
    (B) Measure frequency
    (C) Measure impedance
    (D) Measure current

150. The ability of a material to remain magnetized after removal of the magnetizing force is known as
    (A) Permeability
    (B) Reluctance
    (C) Hysteresis
    (D) Retentivity

15

SET III (Electrical, Electronics & Computer)

1	D	51	B	101	D
2	D	52	A	102	C
3	B	53	C	103	A
4	B	54	C	104	C
5	B	55	A	105	A
6	C	56	B	106	A
7	D	57	C	107	A
8	D	58	B	108	D
9	B	59	A	109	B
10	C	60	B	110	C
11	A	61	D	111	B
12	D	62	A	112	B
13	C	63	A	113	B
14	A	64	C	114	C
15	D	65	B	115	C
16	A	66	A	116	A
17	A	67	D	117	A
18	A	68	A	118	C
19	B	69	A	119	A
20	B	70	A	120	A
21	B	71	B	121	A
22	D	72	A	122	D
23	C	73	D	123	D
24	C	74	A	124	C
25	D	75	C	125	B
26	C	76	A	126	C
27	D	77	B	127	B
28	D	78	B	128	A
29	C	79	D	129	D
30	A	80	B	130	D
31	D	81	A	131	D
32	D	82	B	132	D
33	A	83	B	133	C
34	A	84	B	134	C
35	C	85	C	135	C
36	C	86	C	136	B
37	B	87	C	137	A
38	C	88	A	138	D
39	A	89	C	139	B
40	D	90	A	140	B
41	B	91	B	141	D
42	C	92	A	142	B
43	A	93	D	143	D
44	C	94	C	144	B
45	B	95	B	145	A
46	C	96	D	146	A
47	C	97	A	147	C
48	B	98	C	148	A
49	B	99	A	149	B
50	C	100	B	150	D