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Previous Year Paper
30 Sept 2018 (Technical)

Booklet Series - E

-2-

1. The study of Inscription is called
   A) Archaeology   B) Numismatic   C) Epigraphy   D) Palaeography

2. Which of the following Act of British led to the mass protest in every part of India at all levels ?
   A) Indian Criminal Law Amendment Act (1908 A.D.)
   B) Multi-fanged Defence of India Rule (1915 A.D.)
   C) The Press Act (1910 A.D.)
   D) Rowlatt Act (1919 A.D.)

3. Viceroy of India during Jallianwala Bagh Massacre.
   A) Lord Curzon   B) Lord Chelmsford   C) General Dyer   D) Lord Minto

4. First Movement against British in India was
   A) Swadeshi Movement   B) Khilafat Movement
   C) Quit India Movement   D) Non Cooperative Movement

5. The High Commissioner for India in the United Kingdom must be appointed by
   A) Parliament of England   B) Secretary of State of India
   C) The Govt. of India   D) None of the above

6. With regard to division of power, under which list is the subject 'Education' included ?
   A) Union list   B) State list
   C) Concurrent list   D) Residuary powers

7. Who was the first Vice-President of India ?
   A) Dr. S. Radhakrishnan   B) Dr. Rajendra Prasad
   C) Venkatraman   D) V. V. Giri

8. Who is going to be next Chief Justice of India ?
   A) Ranjan Bhattacharya   B) Ranjan Gogoi
   C) Ranjan Das   D) Ranjan Bora

9. Neeraj Chopra won gold medal in 2018 Asian Games in which event ?
   A) Discus Throw   B) Javelin Throw   C) Shot Put   D) Long Jump

10. IoT stands for _____
    A) Internet of Transaction   B) Integration of Things
    C) Internet of Things   D) Information of Time

11. What is the property of cells to develop into whole new plants called ?
    A) Totipotency   B) Pluripotency   C) Holopotency   D) Differentiation

12. Which of the following is not a biofertilizer ?
    A) Anabaena   B) Baculoviruses   C) Oscillatoria   D) Nostoc

13. Which of the following terms is not related to sewage treatment ?
    A) BOD   B) Glomus   C) Flocs   D) Sludge

14. The term that describes the phenomenon of increase in the concentration of pesticides in the food chain, is
    A) Eutrophication   B) Melanism   C) Biomagnification   D) Biofortification

C

15. The concept of Net Economic Welfare has been given by
    A) Samuelson   B) Alfred Marshall   C) Adam Smith   D) Lionel Robbins

16. The lipid present in the white matter of brain is
    A) Phospholipid   B) Galactolipid   C) Glycolipid   D) Lecithin

17. In the presence of impurities melting point of a substance
    A) Increases   B) Decreases
    C) Remains unchanged   D) None

18. $_{92}U^{235} + _0n^1 \rightarrow _{42}Mo^{98} + _{54}Xe^{136} + x_{-1}e^0 + 2_0n^1$

    Then x is
    A) 1   B) 2   C) 3   D) 4

19. The maximum percentage efficiency possible from an engine working between 127°C and 27°C is
    A) 25%   B) 100%   C) 78.7%   D) 67%

20. Medicine used for curing rabies is
    A) Antimalarial   B) Antiviral   C) Antifungal   D) Antibiotic

21. The Government of India Act of 1935 borrowed its Preamble from
    A) The Constitution of Australia   B) The Constitution of U.S.A.
    C) From Pitt's India Act   D) From the Government of India Act 1919

22. Who among the following Revolutionary gave the slogan 'Inquilab Zindabad' ?
    A) Mahatma Gandhi   B) Bipin Chandra Pal
    C) Syed Ahamed Khan   D) Bhagat Singh

23. How many volunteers had accompanied Gandhi on the famous 'Dandi March' of March 12, 1930 ?
    A) 78   B) 112   C) 16   D) 54

24. Superior, Michigan, Huron, Erie and Ontario are a series of interconnected fresh water lakes in the continent of
    A) North America   B) Africa   C) South America   D) Europe

25. Who in his theory (1793) stated the number of people would increase faster than the food supply ?
    A) Thomas Hardy   B) Thomas Malthus
    C) Thomas Alva Edison   D) Thomas Watt

26. Who is the current Prime Minister of Pakistan ?
    A) Javed Miandad   B) Imran Nazir
    C) Wasim Akram   D) Imran Khan

27. Which of these is odd one out ?
    a. E-bay
    b. Facebook
    c. Alibaba
    d. Amazon
    A) a   B) b   C) c   D) d

C

28. Which country won gold in Men's Hockey in 2018 Asian Games ? — *Japan*
   A) Pakistan   B) South Korea   C) India   D) Malaysia

29. Which one is the odd one out ?   *wrong key*
   a. Mozilla
   b. Safari
   c. Windows
   d. Chrome
   A) a   B) b   C) c   D) d

30. Who is the current CEO of Microsoft ?
   A) Bill Gates   B) Sundar Pichai
   C) Satya Nadella   D) Indra Nooyi

31. When sodium acetate is added to acetic acid the degree of ionisation of acetic acid
   A) Increases   B) Decreases
   C) Does not change   D) Becomes zero

32. Methyl ketones are usually characterised by
   A) The Fehling's solution   B) The Iodoform test
   C) The Schiff's test   D) The Tollon's reagent

33. The compound used to cut glasses
   A) Silicon tetra chloride   B) Sodium silicate
   C) Silicon carbide   D) Silicon dioxide

34. A fish that is commonly introduced into ponds to feed on mosquito larvae is
   A) Gambusia   B) Hilsa   C) Catla   D) Rohu

35. HIV attacks which of the following cells.
   A) B Lymphocytes   B) Monocytes   C) T Lymphocytes   D) Neutrophils

36. Foodstuffs, shoes, pottery and brick from clay and stones; can be termed as
   A) Cottage manufacturing   B) Chemical based industries
   C) Small scale manufacturing   D) Large scale manufacturing

37. _____ registered the lowest growth rate (population) in the country.
   A) Kerala   B) W. Bengal   C) Bihar   D) Andhra Pradesh

38. Which of these places is NOT in sea coast of India ?
   A) Cochin   B) Kolkotta   C) Mangalore   D) Bangalore

39. The Trans-Siberian Railway is in
   A) Japan   B) China   C) Russia   D) Africa

40. What do Bokaro, Durgapur, Raniganj and Singrauli have in common ?
   A) Coal fields   B) Iron ore   C) Gold fields   D) Hydraulic power stations

C

41. A wire of resistance 8Ω is bent into a circle. The resistance between ends of a diameter of the circle is

    A) 8Ω   B) 2Ω   C) $\dfrac{1}{8}\Omega$ D) $\dfrac{1}{16}\Omega$

42. A cube of side 'b' has a charge 'q' at each of its vertices. What is the electric potential at the centre of the cube ?

    A) $\dfrac{4q}{\sqrt{3}\pi\varepsilon_0 b}$ B) $\dfrac{\sqrt{3}q}{\pi\varepsilon_0 b}$ C) $\dfrac{2q}{\pi\varepsilon_0 b}$ D) Zero

43. If an electron and a proton are projected at right angles to a uniform magnetic field with the same linear momentum
    A) The electron trajectory will be less curved than the proton trajectory
    B) The proton trajectory will be less curved than the electron trajectory
    C) Both trajectories will be equally curved
    D) Both particles move in a straight line

44. A lens of power −2.0 D is placed in contact with another lens of power + 1.0D. The combination will behave like
    A) Converging lens of focal length 100 cm
    B) A diverging lens of focal length 100 cm
    C) A converging lens of focal length 50 cm
    D) A diverging lens of focal length 50 cm

45. What happens if the monochromatic light used in Young's double slit experiment is replaced by white light ?
    A) All bright fringes become white
    B) All bright fringes have colours between violet and red
    C) Only the central fringe is white, all the other fringes are coloured
    D) No fringes will be observed

46. Partners who contribute capital but does not take part in the management is called as
    A) Active partner   B) Nominal partner
    C) Sleeping partner   D) Partner by Estoppel

47. Average fixed cost is obtained by dividing
    A) TC/Q   B) TFC/Q   C) TVC/Q   D) None

48. This business system is found only in India
    A) Sole Proprietorship   B) Partnership
    C) Joint Hindu Family Business   D) Co-operative Society

49. A firm can achieve equilibrium when its
    A) MC = MR   B) MC = AC   C) MR = AR   D) MR = MC

50. The head office of the Securities and Exchange Board of India (SEBI) is in
    A) Kolkatta   B) Mumbai   C) Chennai   D) Delhi

C

51. Which of these is a ferrous metal ?
    A) Copper   B) Brass   C) Manganese   D) Lead

52. The first All-India Census was completed in the year
    A) 1870   B) 1872   C) 1874   D) 1881

53. In which year the Family Court Act was formulated ?
    A) 1985   B) 1984   C) 1980   D) 1982

54. Which of the following has a Presidential form of Government ?
    A) India   B) U.S.A.   C) Britain   D) Italy

55. How can the Chief Election Commissioner be removed ? And by whom ?
    A) By the President on the recommendation of Supreme Court
    B) By the President on the recommendation of Cabinet
    C) By the President on the recommendation of Parliament
    D) By the President on the recommendation of the other two Election Commissioner

56. Choose the incorrect statement from the following.
    A) If the electric field is zero at a point, the electric potential must also be zero at that point
    B) If electric potential is constant in a given region of space, the electric field must be zero in that region
    C) Two different equi-potential surfaces can never intersect
    D) Electron moves from a region of lower potential to a region of higher potential

57. In an a.c. circuit the potential difference 'V' and current 'I' are given respectively by
    $V = 100 \sin(100t)$ volt and $I = 100 \sin(100t + \pi/3)$ mA. The power dissipate in the circuit will be
    A) 10^4W   B) 10 W   C) 5 W   D) 2.5 W

58. A radioactive substance disintegrates $\frac{1}{64}$ of initial value of 60 seconds. The half life of the substance is
    A) 5S   B) 10S   C) 30S   D) 20S

59. The magnifying power of telescope is high if
    A) Both objective and eye-piece have short focal length
    B) Both objective and eye-piece have long focal length
    C) The objective has a long focal length and the eye-piece has a short focal length
    D) The objective has a short focal length and the eye-piece has a long focal length

60. Violet light can cause photoelectric emission from a metal but blue light cannot.
    If sodium light is incident on the metal, then
    A) The photoelectric current decreases
    B) The number of photoelectrons ejected per second increases
    C) The velocity of photoelectrons increases
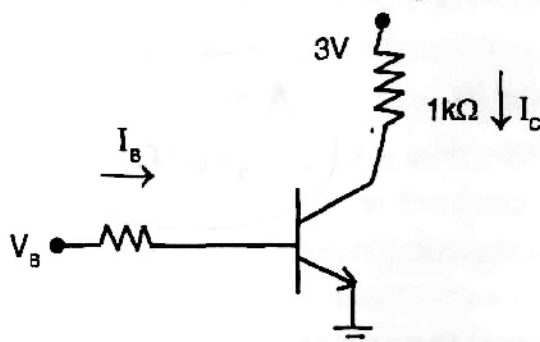   D) No photoelectric emission occurs

C

PART – B : Technical Subject

61. In superconductivity, the electrical resistance of material becomes
    A) Zero   B) Infinite   C) Finite   D) Unity

62. The function on an oscilloscope that "locks in" waveforms so that they do not scroll horizontally across the screen is called the
    A) Horizontal sync   B) Time base   C) Beam finder   D) Trigger

63. Any radiation of appropriate wavelength fall on the depletion layer of p-n junction develops a potential difference between the junction is working principle of
    A) Hall effect sensor   B) Proximity sensor
    C) Light sensor   D) All of the above

64. Super position theorem is applicable for
    A) Non-linear circuits only   B) Linear circuits only
    C) Linear and non-linear circuits   D) None of these

65. Norton's theorem results in
    A) A current source with an impedance in parallel
    B) A voltage source with an impedance in series
    C) A current source alone
    D) A voltage source alone

66. When a tri-stated register is disabled, the output level of the register is
    A) Floating   B) High impedance state
    C) Pulled low   D) Floating and high impedance state

67. Given the two binary numbers X = 1011000 and Y = 1000111, perform the subtraction X – Y using 2's complement.
    A) 0011111   B) 0010000   C) 0010001   D) None of the above

68. In a 16:4 priority encoder, lowest priority is given on
    A) 7   B) 0   C) 9   D) F

69. What is the required baud rate for efficient operation of serial port devices ?
    A) 1200   B) 2400   C) 4800   D) 9600

70. The two pins in 8085, specially designed for software controlled serial I/O are
    A) SIM, RIM   B) SID, SOD   C) RD, WR   D) T x D, R x D

71. VSB modulation is preferred in TV because
    A) It reduces the bandwidth requirement to half
    B) It avoids phase distortion at low frequencies
    C) It results in better reception
    D) None of the above

    A or C doubtful

72. Carson's rule is used to calculate
    A) Bandwidth of FM signal   B) Signal to noise ration
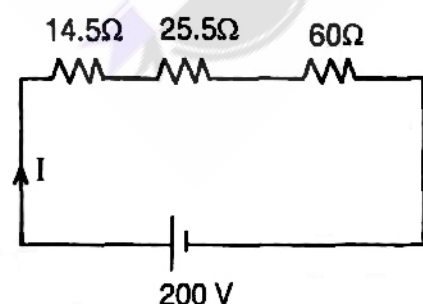   C) Modulation index   D) Noise figure

C

73. In binary phase shift keying system, the binary symbols 1 and 0 are represented by carrier with phase shift of

A) $\pi/2$　　　　B) π　　　　C) 2π　　　　D) 0

74. Rise Time Budget is a method to find the _____ limitation of an optical fiber link.

A) Attenuation　　B) Dispersion　　C) Quantum　　D) Data rate

75. The relation between carrier power and total power in an amplitude modulated wave is given by

A) $P_C = P_T\left(1+\dfrac{m^2}{4}\right)$　　　　　　B) $P_T = P_C\left(1+m^2/2\right)$

C) $P_C = P_T\left(1+m^2/2\right)$　　　　　　D) $P_C = 2P_T$

76. An amplitude modulated amplifier has a radio frequency output of 50 W at 100% modulation. The internal loss in the modulator is low, the unmodulated carrier power is

A) 60 W　　　　B) 50 W　　　　C) 40 W　　　　D) 30 W

77. In Viterbi's algorithm, the selected paths are regarded as

A) Survivors　　B) Defenders　　C) Destroyers　　D) Carriers

78. The capacity of a binary symmetric channel, given H(p) is binary entropy function is

A) $1 - H(p)$　　B) $H(p) - 1$　　C) $1 - H(p)2$　　D) $H(p)2 - 1$

79. Mobile Assisted Handoff (MAHo) provides
A) Faster handoffs
B) Suitability for frequent handoffs
C) MSC need not monitor the signal strength
D) All of the above

80. Population inversion is obtained at a p-n junction by
A) Heavy doping of p-type material
B) Heavy doping of n-type material
C) Light doping of p-type material
D) Heavy doping of both p-type and n-type material

81. Assuming $V_{CE\ (sat)} = 0.3$ V and $\beta = 100$, the minimum base current (I_B) required to drive the transistor in the figure to saturation is

A) 2.7 mA　　　　B) 27 µA　　　　C) 2.5 µA　　　　D) 3 µA

82. If the source resistance of the current source I_{EE} in the differential amplifier is infinite, then common mode gain is
    A) Infinite   B) Indeterminate   C) Zero   D) $(V_{in_1} + V_{in_2}) + 2 V_T$

83. The transconductance g_m of JFET is equal to

    A) $\dfrac{-2 I_{DSS}}{V_P}$

    B) $\dfrac{-2 I_{DSS}}{V_P}\left(1 - \dfrac{V_{GS}}{V_P}\right)$

    C) $\dfrac{2}{|V_P|}\sqrt{I_{DSS}I_D}$

    D) $\dfrac{I_{DSS}}{V_P}\left(1 - \dfrac{V_{GS}}{V_P}\right)$

84. A cascode Amplifier has the advantage of
    A) Large Voltage gain   B) High output impedance
    C) Large Bandwidth   D) All of these

85. If the output of an amplifier is 10V and the feedback voltage is 100mV, then the feedback factor is
    A) 0.1   B) 1   C) 0.01   D) 1.5

86. Which semiconductor power device out of the following is not a current triggered device ?
    A) Thyristor   B) MOSFET   C) GTO   D) Triac

87. For purely reactive circuits, the phase angle between voltage and current is
    A) 90°   B) 30°   C) 45°   D) 0°

88. A battery has an EMF of 12.8 volts and supplies a current of 3.24A. What is the resistance of the circuit ?
    A) 6Ω   B) 4Ω   C) 10Ω   D) 8Ω

89. Calculate the voltage drop across 14.5Ω resistor in the circuit

    14.5Ω   25.5Ω   60Ω

    I

    200 V

    A) 18 V   B) 30.5 V   C) 29 V   D) 14 V

90. A triangular wave shape is obtained by
    A) Integrating a sine wave   B) Differentiating a square wave
    C) Integrating a square wave   D) Differentiating a sine wave

C

91. The 8255 PPI is used as described below :

    i) An A/D converter is interfaced to a microprocessor through an 8255. The conversion is initiated by a signal from 8255 on Port – C. A signal on Port – C causes data to be stored into Port – A.

    ii) Two computers exchange data using a pair of 8255s. Port – A works as a bidirectional port supported by appropriate handshaking signals.

    The appropriate modes of operation of 8255 for (i) and (ii) would be

    A) Mode – 0 for (i) and Mode – 1 for (ii)
    B) Mode – 1 for (i) and Mode – 2 for (ii)
    C) Mode – 2 for (i) and Mode – 0 for (ii)
    D) Mode – 2 for (i) and Mode – 1 for (ii)

92. For the 8085 ALP given below, the content of A-register after execution is

    3000   MVI   A, 45 A
    3002   MOV   B, A
    3003   STC
    3004   CMC
    3005   RAR
    3006   XRA   B

    A) 00 H   B) 45 H   C) 67 H   D) E7 H

93. List out the control signal of DMA in 8085.
    A) HOLD and HLDA   B) HOLD only
    C) HOLD and ACK   D) HLDA and RESET IN

94. The first machine cycle of an instruction is always
    A) A memory read cycle   B) A fetch cycle
    C) An I/O read cycle   D) A memory write cycle

95. Which is the highest priority interrupt in 8085 ?
    A) TRAP   B) RST 6.5   C) RST 5.5   D) RST 7.5

96. IEEE 802.15 standard refers to
    A) WLAN   B) OFDM   C) ETHERNET   D) BLUETOOTH

97. 3G W-CDMA is also known as
    A) UMTS   B) DECT   C) DCS – 1800   D) ETACS

98. The maximum frequency deviation of an FM signal depends on
    A) Maximum amplitude of the modulating signal
    B) Bandwidth of the modulation signal
    C) Maximum amplitude of the carrier signal
    D) Frequency of the modulating signal

99. The amplitude of the carrier is made proportional to the instantaneous amplitude of the modulating voltage
    A) Frequency modulation   B) Phase modulation
    C) Phase width modulation   D) Amplitude modulation

100. What is the carrier frequency in an AM wave when its highest frequency component is 850 Hz and the bandwidth of the signal is 50 Hz ?
    A) 80 Hz
    B) 695 Hz
    C) 625 Hz
    D) 825 Hz

101. Which of the following cannot be checked in a switch-case statement ?
    A) Character
    B) Integer
    C) Float
    D) Enum

102. A mechanism used to verify and maintain the integrity of the data is
    A) Parity
    B) RAID
    C) SCSI
    D) SATA

103. All keywords in C are in
    A) Lower case letters
    B) Upper case letters
    C) Both the above
    D) None of the above

104. Which is the slowest internet connection service ?
    A) Cable modem
    B) Landline
    C) Dial up service
    D) Digital subscriber line

105. Which of these is not applicable for IP protocol ?
    A) Is connectionless
    B) Offer reliable service
    C) Offer unreliable service
    D) None of the above

106. In wein bridge oscillator, if the value of Resistance R is 100 KΩ and the frequency of oscillation is 10 kHz, then the value of capacitor C is
    A) 129 pF
    B) 131 pF
    C) 145 pF
    D) 159 pF

107. The current gain of a transistor in CE mode is 49. Its Common Base Current gain is
    A) 99
    B) 50
    C) 0.8
    D) 0.98

108. For a Zener diode, having maximum Zener current of 5 mA and voltage $V_z = 10V$, the maximum power dissipation is
    A) 1 W
    B) 5 mW
    C) 50 mW
    D) 0.5 W

109. Voltage series feedback (also called series-shunt feedback) results in
    A) Increase in both input and output impedance
    B) Decrease in both input and output impedance
    C) Increase in input impedance and decrease in output impedance
    D) Decrease in input impedance and increase in output impedance

110. A half wave Rectifier supplies 100 mA current to a 250 Ω load. Its dc output voltage is
    A) 2.5 V
    B) 25 V
    C) 78.54 V
    D) 0.25 V

111. The input power to a transformer under no load is practically equal to its
    A) Iron loss
    B) Eddy current loss
    C) Copper loss
    D) Sum of iron loss and eddy current loss

112. An external resistance 'R' is connected to a voltage source with internal resistance of 'r'. The maximum current flows in the external resistance when
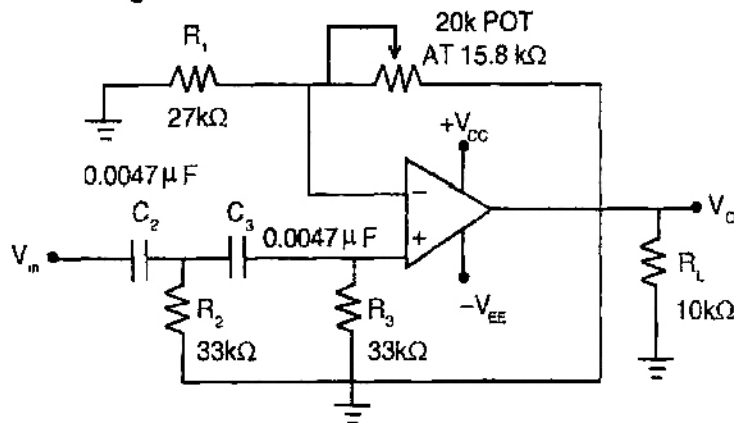   A) R = r
    B) R > r
    C) R < r
    D) R = 2r

113. A stepper motor with a step angle of 12° has a stepping frequency of 300 steps/second. What is the motor speed ?
A) 600 rpm B) 300 rpm C) 750 rpm D) 900 rpm

114. One of the following can act as an inverse transducer
A) Electrical resistance potentiometer B) LVDT
C) Capacitive transducer D) Piezoelectric crystal

115. In a 3½ digit voltmeter, the largest number that can be read is
A) 0999 B) 1999 C) 4999 D) 9999

116. _____ is the horizontal pointing angle of an antenna.
A) Azimuth B) Angle of elevation
C) Right angle D) Beamwidth

117. The radiation pattern of Yagi-Uda antenna is
A) Omnidirectional B) Bidirectional
C) Unidirectional D) None

118. The circuit attenuate a given frequency band
A) Band pass filter B) Low pass filter
C) High pass filter D) Band elimination filter

119. The solid area through which all the power radiated by the antenna is
A) Beam area B) Effective area C) Aperture area D) Beam efficiency

120. The directivity of an isotropic antenna is
A) 10 dB B) 0 dB C) 1 dB D) 3 dB

121. Syn flooding attack belongs to a group of security attacks known as
A) Denial of service attack B) BRUTE force attack
C) Replay attack D) Timing attack

122. Which one is not the responsibility of DATALINK layer ?
A) Logical Addressing B) Physical Addressing
C) Flow control D) Error control

123. A video consists of a sequence of
A) Frames B) Signals C) Packets D) Slots

124. Extension of MS-Word file is
A) wrd B) xls C) jpg D) doc

125. To print 'a' and 'b' declared as below, which of the following printf( ) statement will you use ?

float a = 3.14 ;

double b = 3.14 ;

A) printf("%f%lf",a, b) ; B) printf("%Lf%f", a, b) ;
C) printf("%Lf% Lf", a, b) ; D) printf ("%f% Lf", a, b) ;

126. A source alphabet consists of N symbols with the probability of the first two symbols being the same. A source encoder increases the probability of the first symbol by a small amount ε and decreases that of the second by ε. After encoding, the entropy of the source
A) Increases B) Remains the same
C) Increases only if N = 2 D) Decreases

C

127. An ideal bandpass channel 500 Hz to 2000 Hz is deployed for communication. A modem is designed to transmit at the rate of 4800 bits/sec using 16 QAM. The roll-off factor of a pulse with a raised cosine spectrum that utilize the entire frequency band is
    A) 0.50   B) 0.25   C) 0.40   D) 0.20

128. Noise caused by random variations in the arrival of electrons (or holes) at the output electrode of an amplifying device is called as
    A) Transit time noise   B) Flicker
    C) Shot noise   D) Atmospheric noise

129. If a typical light detector produces 40 µa of current for 80 µw of incident light, what is the responsivity ?
    A) 3200   B) 0.5   C) 120   D) 40

130. What is the sampling rate of a signal when it is sampled at every 0.001 sec ?
    A) 1 samples/sec   B) 100 samples/sec
    C) 10 samples/sec   D) 1000 samples/sec

131. An amplifier has an open loop gain of 100 and a feedback ratio of 0.49. The closed loop gain of the amplifier with negative feedback is
    A) 20   B) 10   C) 2   D) None of the above

132. The forbidden energy gap for silicon is
    A) 1.12 eV   B) 0.32 eV   C) 0.72 eV   D) 1.12 eV

133. In a semiconductor diode, V-I relationship is such that
    A) Current varies linearly with voltage
    B) Current increases exponentially with voltage
    C) Current varies inversely with voltage
    D) None of these

134. In a NPN transistor, when the emitter junction is forward biased and the collector junction is reverse biased, then the transistor will operate in
    A) Active region   B) Saturation region
    C) Cut-off region   D) Inverted region

135. The input impedance of a common Base Amplifier is
    A) High   B) Low   C) Medium   D) Approximately equal to 1

136. An ideal OPAMP is an ideal
    A) Voltage controlled current source   B) Voltage controlled voltage source
    C) Current controlled current source   D) Current controlled voltage source

137. An RS Latch is a
    A) Combinational circuit   B) Synchronous sequential circuit
    C) One bit memory element   D) One clock delay element

C

138. The following OPAMP circuit is identified as

A) I order LPF   B) I order HPF   C) II order LPF   D) II order HPF

139. Four JK flip-flops are cascaded with their JK inputs tied HIGH. If the input frequency to the first flip-flop is 32 kHz, the output frequency is
A) 1 kHz   **B) 2 kHz**   C) 4 kHz   D) 16 kHz

140. In a Phase Lock Loop (PLL), if the low pass filter is replaced with a high pass filter, the response of the PLL would be
A) Generated with many high frequency components
B) Unstable due to variations in control voltage of VCO
C) Non-square wave output
D) All the above

141. Ducting occurs in which region of the atmosphere ?
A) Stratosphere   B) Ionosphere   **C) Troposphere**   D) Ozone layer

142. Sterdian is a measurement unit of
A) Point angle   B) Linear angle   C) Plane angle   **D) Solid angle**

143. The cut-off frequency of an LC low pass filter is
A) $\dfrac{1}{\sqrt{LC}}$ B) $\dfrac{1}{\pi\sqrt{LC}}$ C) $\dfrac{1}{2\pi\sqrt{LC}}$ D) $\dfrac{1}{4\pi\sqrt{LC}}$

144. In the far field, characteristic impedance of free space is
A) 75Ω   B) 50Ω   **C) 377Ω**   D) 277Ω

145. The polarization of an electromagnetic wave is defined by the direction of
A) The H field   B) Propagation
C) The receiving antenna   **D) The E field**

146. Golay codes are useful in
A) Detecting any combination of three or fewer random errors in a block of 27 bits
B) Correcting any combination of 3 or fewer random errors in a block of 23 bits
C) Detecting any combination of 3 or more random errors in a block of 23 bits
D) Correcting any combination of 3 or more random errors in a block of 27 bits

147. The ability of the receiver to select the wanted signals among the various incoming signals is termed as
A) Sensitivity   **B) Selectivity**   C) Stability   D) None of the above

C

148. Lempel-Ziv algorithm is
A) Variable to fixed length algorithm
B) Fixed to variable length algorithm
C) Fixed to fixed length algorithm
D) Variable to variable length algorithm

149. Transistor T_1 operates at 20 kHz and T_2 operates at 200 Hz. The flicker noise is
A) More in T_1
B) More in T_2
C) Equal in both
D) Depends on bias

150. The total no. of modes M entering the fiber depends on wavelength 'λ', radius of fiber 'r' and refractive indices (n_1, n_2) is given by the relation

A) $M = 2\pi^2 r^2 \sqrt{n_1^2 - n_2^2}$

B) $M = \left(2\pi^2 r^2 / \lambda^2\right)\left(n_1^2 - n_2^2\right)$

C) $M = 2\pi^2 r^2 \lambda^2 n_1^2 n_2^2$

D) $M = 2\pi^2 r^2 / \lambda^2 \left(n_1^2 - n_2^2\right)$

151. Which interface can be used to connect the printer to processor ?
A) Serial interface
B) Parallel interface
C) USB
D) SCSI

152. Digital signature uses
A) One key
B) Pair of private and public keys
C) 4 private keys
D) No keys

153. PowerPoint do not allow
A) Bullets
B) Graph
C) An organizational chart
D) To run a query

154. If-else statement in 'C' program can be replaced with _____ operator.
A) Short hand operator
B) Conditional operator
C) Special operator
D) Type cast

155. Which is the unconditional statement ?
A) Nested if statement
B) Switch statement
C) Else-if ladder
D) Goto

156. The device parameters for an n-channel JFET are : Maximum current I_{DSS} = 10 mA, pinch-off voltage $V_P = -4V$. The drain current for $V_{GS} = -4V$ is
A) 0 A
B) 10 mA
C) 20 mA
D) 25 mA

157. In a P-type silicon, the hole concentration is 2.25×10^{15} cm^{-3}. If intrinsic carrier concentration is 1.5×10^{10} cm^{-3}, then the electron concentration is
A) 0
B) 10^5 cm^{-3}
C) 10^{10} cm^{-3}
D) 1.5×10^{10} cm^{-3}

158. In a power supply, the DC output voltage drops from 44V with no-load to 42 V at full load. The percentage of voltage regulation is
A) 5%
B) 4.76%
C) 4.2%
D) 4.4%

159. The minimum value of current required to maintain conduction in SCR is
A) Commutation current
B) Holding current
C) Gate trigger
D) Break over

160. The Early-Effect in a bipolar junction transistor is caused by
A) Fast-turn-ON
B) Fast-turn-OFF
C) Large collector-Base reverse bias
D) Large emitter-base reverse bias

C