

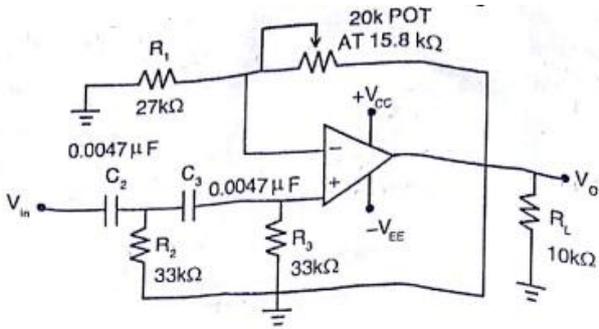
TNUSRB SI Technical Answer Key – Technical Part

- In superconductivity, the electrical resistance of material becomes
 a) Zero b) Infinite
 c) Finite d) Unity
- 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
- 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
- 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
- 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
- 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
- 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
- In a 16:4 priority encoder, lowest priority is given on
 a) 7 b) 0
 c) 9 d) F
- What is the required baud rate for efficient operation of serial port devices?
 a) 1200 b) 2400
 c) 4800 d) 9600
- 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
- VSB modulations 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
- Carson’s rule is used to calculate
 a) Bandwidth of FM signal
 b) Signal to noise ration
 c) Modulation index
 d) Noise figure
- 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
- Rise Time Budget is a method to find the _____ limitation of an optical fiber link.
 a) Attenuation b) Dispersion
 c) Quantum d) Data rate
- The relation between carrier power and total power in an amplitude modulated wave is given by
 a) $P_C = P_T \left(1 + \frac{m^2}{4}\right)$
 b) $P_T = P_C (1+m^2/2)$
 c) $P_C = P_T (1 + m^2/2)$

- a) Integrating a sine wave
b) Differentiating a square wave
c) Integrating a square wave
d) Differentiating a sine wave
31. 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)
32. 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
33. 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
34. 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
35. Which is the highest priority interrupt in 8085?
- a) TRAP                      b) RST 6.5  
c) RST 5.5                      d) RST 7.5
36. IEEE 802.15 standard refers to
- a) WLAN                      b) OFDM  
c) ETHERNET                      d) BLUETOOTH
37. 3G W- CDMA is also known as
- a)UMTS                      b) DECT  
c) DCS - 1800                      d) ETACS
38. 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
39. 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
40. 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
41. Which of the following cannot be checked in a switch - case statement?
- a) Character                      b) Integer  
c) Float                      d) Enum
42. A mechanism used to verify and maintain the integrity of the data is
- a) Parity                      b) RAID  
c) SCSI                      d) SATA
43. All keywords in C are in
- a) Lower case letters  
b) Upper case letters  
c) Both the above  
d) None of the above
44. Which is the slowest internet connection service?

- a) Cable modem  
b) Landline  
c) Dial up service  
d) Digital subscriber line
45. 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
46. In wein bridge oscillator, if the value of Resistance R is 100 k $\Omega$  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
47. 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
48. For a Zener diode, having maximum Zener current of 5 mA and voltage  $V_z = 10V$ , the maximum power dissipation is  
a) 1W                              b) 5 Mw  
c) 50 mW                        d) 0.5 W
49. 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
50. A half wave Rectifier supplies 100mA current to a 250 $\Omega$  load. Its dc output voltage is  
a) 2.5V                            b) 25 V  
c) 78.54 V                        d) 0.25 V
51. 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
52. 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)  $R = 2r$
53. 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
54. One of the following can act as an inverse transducer  
a) Electrical resistance potentiometer  
b) LVDT  
c) Capacitive transducer  
d) Piezoelectric crystal
55. In a 3½ digit voltmeter, the largest number that can be read is  
a) 0999                              b) 1999  
c) 4999                              d) 9999
56. \_\_\_\_\_ is the horizontal pointing angle of an antenna  
a) Azimuth  
b) Angle of elevation  
c) Right angle  
d) Beamwidth
57. The radiation pattern of Yagi - Uda antenna is  
a) Omnidirectional                b) Bidirectional  
c) Unidirectional                 d) None
58. The circuit attenuate a given frequency band  
a) Band pass filter  
b) Low pass filter  
c) High pass filter  
d) Band elimination filter
59. 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
60. The directivity of an isotropic antenna is  
a) 10 dB                      **b) 0 dB**  
c) 1 dB                        d) 3 dB
61. 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
62. Which one is not the responsibility of DATALINK layer?  
a) Logical Addressing  
**b) Physical Addressing**  
c) Flow control  
d) Error control
63. A video consists of a sequence of  
**a) Frames**                      b) Signals  
c) Packets                      d) Slots
64. Extension of Ms - Word file is  
a) Wrd                        b) xls  
c) jpg                         **d) doc**
65. 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) ;
66. 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  $\epsilon$  and decreases that of the second by  $\epsilon$ . After encoding, the entropy of the source  
a) Increases  
b) Remains the same  
c) Increases only if  $N = 2$   
**d) Decreases**
67. 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
68. 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
69. If a typical light detector produces 40  $\mu$ a of current for 80  $\mu$ w of incident light, what is the responsivity?  
a) 3200                        **b) 0.5**  
c) 120                         d) 40
70. 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**
71. 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
72. The forbidden energy gap for silicon is  
**a) 1.12 eV**                      b) 0.32 eV  
c) 0.72 eV                      d) 1.12 eV
73. 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
74. 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
75. The input impedance of a common Base Amplifier is
- a) High
- b) Low
- c) Medium
- d) Approximately equal to 1
76. 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
77. An RS Latch is a
- a) Combinational circuit
- b) Synchronous sequential circuit
- c) One bit memory element
- d) One clock delay element
78. The following OPAMP circuit is identified as
- 
- a) I order LPF
- b) I order HPF
- c) II order LPF
- d) II order HPF
79. 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
80. 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
81. Ducting occurs in which region of the atmosphere?
- a) Stratosphere
- b) Ionosphere
- c) Troposphere
- d) Ozone layer
82. Steradian is a measurement unit of
- a) Point angle
- b) Linear angle
- c) Plane angle
- d) Solid angle
83. The cut-off frequency of an LC low pass filter is
- a)  $1/\sqrt{LC}$
- b)  $1/\pi\sqrt{LC}$
- c)  $1/2\pi\sqrt{LC}$
- d)  $1/4\pi\sqrt{LC}$
84. In the far field, characteristic impedance of free space is
- a) 75Ω
- b) 50Ω
- c) 377Ω
- d) 277Ω
85. 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
86. 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

87. The ability of the receiver to select the wanted signals among the various incoming signals is termed as
- Sensitivity
  - Selectivity**
  - Stability
  - None of the above
88. Lempel - Ziv algorithm is
- Variable to fixed length algorithm**
  - Fixed to variable length algorithm
  - Fixed to fixed length algorithm
  - Variable to variable length algorithm
89. Transistor  $T_1$  operates at 20 kHz and  $T_2$  operates at 200 Hz. The flicker noise is
- More in  $T_1$
  - More in  $T_2$**
  - Equal in both
  - Depends on bias
90. The total no. of modes  $M$  entering the fiber depends on wavelength ' $\lambda$ ' radius of fiber ' $r$ ' and refractive indices ( $n_1, n_2$ ) is given by the relation
- $M = 2\pi^2 r^2 \sqrt{n_1^2 - n_2^2}$
  - $M = (2\pi^2 r^2 / \lambda^2) (n_1^2 - n_2^2)$**
  - $M = 2\pi^2 r^2 / \lambda^2 (n_1^2 - n_2^2)$
  - $M = 2\pi^2 r^2 / \lambda^2 (n_1^2 - n_2^2)$
91. Which interface can be used to connect the printer to processor?
- Serial interface
  - Parallel interface**
  - USB
  - SCSI
92. Digital signature uses
- One key
  - Pair of private and public keys**
  - An organizational chart
  - No keys
93. Power point do not allow
- Bullets
  - Graph
  - An organizational chart
  - To run a query**
94. If else statement in 'C' program can be replaced with \_\_\_\_\_ operator.
- Short hand operator
  - Conditional operator**
  - Special operator
  - Type cast
95. Which is the unconditional statement?
- Nested if statement
  - Switch statement
  - Else-if ladder
  - Goto**
96. The device parameters for an n-channel JFET are : Maximum current  $I_{DSS} = 10$  mA, pinch - off voltage  $V_p = -4$ V. The drain current for  $V_{GS} = -4$ V is
- 0 A**
  - 10 mA
  - 20 mA
  - 25 mA
97. In a P - type silicon the hole concentration is  $2.25 \times 10^{15} \text{ cm}^{-3}$ . If intrinsic carrier concentration is  $1.5 \times 10^{10} \text{ cm}^{-3}$ , then the electron concentration is
- 0
  - $10^5 \text{ cm}^{-3}$**
  - $10^{10} \text{ cm}^{-3}$
  - $1.5 \times 10^{10} \text{ cm}^{-3}$
98. 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
- 5%
  - 4.76%**
  - 4.2%
  - 4.4%
99. The minimum value of current required to maintain conduction is SCR is
- Commutation current
  - Holding current**
  - Gate trigger
  - Break over
100. The Early - Effect in a bipolar junction transistor is caused by
- Fast-turn-ON
  - Fast-turn-OFF
  - Large collector - Base reverse bias**
  - Large emitter-base reverse bias