## PART B

61. A full binary tree with $2n + 1$ nodes contains

(1) n leaf nodes

(2) n non-leaf nodes

(3) $n - 1$ leaf nodes

(4) $n - 1$ non-leaf nodes

52. The total number of different trees that are possible with six nodes is

(1) 64

(2) 4

(3) 58

(4) 12

53. Convert the expression

(A * B) – (C * D) / ((F + G) – H))

to equivalent prefix notation.

(1) – * AB / * CD – + FGH

(2) * – AB / * CD + – FGH

(3) – * AB * / CD – + FGH

(4) – * AB / * CD + – FGH

54. The common method used to store a graph is

(1) Digraph

(2) Stack

(3) Adjacency Matrix

(4) Linked list

55. Consider the following program segment :

```
i = 6720, j = 4
while((i% j) = = 0)
        {
            i = i/j ;
            j = j + 1;
        }
```

On termination j will have the value

(1) 4

(2) 8

(3) 9

(4) 6720

56. What will be the output of the following C code ?

```
# include <stdio.h>
main (){
 printf ("%.of", 2.89);
 }
```

(1) 2·890000

(2) 2·89

(3) 2

(4) 3

57. Which type of function among the following shows polymorphism ?

(1) Inline function

(2) Virtual function

(3) Undefined function

(4) Class member functions

58. Select emp_name from department where dept_name LIKE _____ Computer Science; Which one of the following has to be included in the blank to select the dept_name which has Computer Science as its ending string ?

(1) %

(2) –

(3) ||

(4) $

59. The number of attributes in a relation is called as its

(1) Cardinality

(2) Degree

(3) Tuples

(4) Entity

60. Start and stop bits are used in serial communication for

(1) Error detection

(2) Error correction

(3) Synchronization

(4) Slowing down the communication

61. How many IP addresses are available to a company with a class 'B' address ?

(1) 8192

(2) 16384

(3) 32768

(4) 65536

62. _____ layer of OSI model is responsible for the process-to-process delivery of the entire message.

(1) Data link Layer

(2) Network Layer

(3) Transport Layer

(4) Session Layer

63. A cathode ray tube converts

(1) Voltage into current

(2) AC voltage into DC voltage

(3) DC voltage into AC voltage

(4) Electrical signals into visual signals

64. Figure of merit of a receiver is given as

(1) $\frac{(SNR)_o}{(SNR)_i}$

(2) $\frac{(SNR)_i}{(SNR)_o}$

(3) $(SNR)_i (SNR)_o$

(4) None of the above

65. Mixing is used in communication to

(1) Raise the carrier frequency

(2) Lower the carrier frequency

(3) Alter the deviation

(4) Change the carrier frequency to any required value

66. What device is used to demodulate a time division multiplexed analog wave ?

(1) High pass filter

(2) Low pass filter

(3) Band stop filter

(4) Band pass filter

67. Which of the following is *not* an advantage of digital modulation ?

(1) Greater noise immunity

(2) Greater security

(3) Easier multiplexing

(4) Less band width requirement

68. The most commonly used connections for power systems as step-up and step-down transformers are

(1) Star – Delta, Star – Star

(2) Delta – Star, Star – Delta

(3) Star – Star, Delta – Delta

(4) Star – Delta, Delta – Star

69. In general daily applications, the electrical fan operates with a _____ inductor motor.

(1) Single phase

(2) Two phase

(3) Three phase

(4) Poly phase

70. Synchronous motors are generally *not* self-starting as

(1) the direction of rotation is not fixed

(2) the direction of instantaneous torque reverses after half cycle

(3) the starters cannot be used on these machines

(4) starting winding is not provided on these machines

71. In series circuits, the expression for quality factor is

(1) $f_r$

(2) Band Width (BW)

(3) $f_r$ / BW

(4) BW / $f_r$

72. Zener diode is used as

(1) Rectifier

(2) Amplifier

(3) Regulator

(4) Oscillator

73. The cross over distortion is due to

(1) Power supply fluctuation

(2) Cut-in voltage of transistor

(3) Bias voltage

(4) Input signal

74. A _____ process generates I/O requests infrequently using more of its time doing computations.

(1) I/O bound

(2) Swapped

(3) Mixed

(4) CPU-bound

75. Paging involves breaking logical memory into blocks of same size called as

(1) Pages

(2) Segments

(3) Fragments

(4) Frames

76. The desirable criteria for CPU scheduling algorithm is

(1) Maximize CPU utilization & Minimize response time

(2) Maximize CPU utilization & Maximize response time

(3) Minimize CPU utilization & Minimize response time

(4) Minimize CPU utilization & Maximize response time

77. Round Robin Scheduling

(1) allows interactive tasks quicker access to the processor

(2) is quite complex to implement

(3) gives each task the same chance at the processor

(4) allows processor-bound tasks more time in the processor

78. _____ approach structures the operating system by removing all non-essential components from the kernel and implementing them as system and user-level programs.

(1) Monolithic kernel

(2) Micro kernel

(3) Macro kernel

(4) Mini kernel

79. Which of the following Gates are used as basic building blocks ?

(1) AND, OR and NOT

(2) NAND and NOR

(3) X-OR and X-NOR

(4) AND and NAND

80. Convert binary to Hexadecimal $(111111110010)_2$

(1) $(EE\ 2)_{16}$

(2) $(FF\ 2)_{16}$

(3) $(EF\ 2)_{16}$

(4) $(FD\ 2)_{16}$

**81.** How many AND gates and OR gates are required to realize Y = CD + EF + G ?

(1) 3 OR gates, 2 AND gates

(2) 2 OR gates, 2 AND gates

(3) 3 OR gates, 3 AND gates

(4) 1 AND gate, 3 OR gates

**82.** The number of bits in operation code required for a computer with 64 distinct operations is

(1) 64

(2) 06

(3) 32

(4) 05

**83.** The operation performed in each clock pulse is called

(1) Micro operation

(2) Micro instruction

(3) Micro program

(4) Macro instruction

**84.** _____ converts the programs written in Assembly language into Machine language.

(1) Compiler

(2) Interpreter

(3) Linker

(4) Assembler

**85.** The address of operand's address is available in instruction. This address mode is called as

(1) Direct Addressing mode

(2) Register Addressing mode

(3) Register Indirect Addressing mode

(4) Indirect Addressing mode

**86.** Reverse Polish notation is often called

(1) Postfix

(2) Prefix

(3) Infix

(4) None of the above

**87.** Prefix of A – B / C * D $ E is

(1) – / * $ A C B D E

(2) / – A B C D * $ D E

(3) – A * / B C $ D E

(4) – A / B C * $ D E

**88.**
```
main ( )
    {
        int i = 5;
        print f ("%d", i = + + i = = 6);
    }
```

The output is

(1) 1

(2) 5

(3) 6

(4) 0

**89.** By default any real number in 'C' is treated as

(1) a float

(2) a double

(3) a long double

(4) a real

**90.** Which of the following operators ***cannot*** be overloaded ?

(1) [ ]

(2) –>

(3) ? :

(4) *

**91.** Minimal super key is otherwise known as

(1) Candidate key

(2) Foreign key

(3) Primary key

(4) Unique key

**92.** A rectangle in an entity-relationship diagram represents

(1) Attributes

(2) Tables

(3) Entity sets

(4) Database

**93.** Baud means the

(1) Number of bits transmitted per unit time

(2) Number of bytes transmitted per unit time

(3) Rate at which the signal changes per second

(4) None of the above

**94.** Which protocol is used to convert IP address to MAC address ?

(1) IP

(2) RARP

(3) *In* ARP

(4) ARP

**95.** Class _____ has the greatest number of hosts per given network address.

(1) B

(2) A

(3) D

(4) C

**96.** In a CRO, the intensity control regulates the

(1) Voltage applied to the cathode

(2) Voltage applied to the focusing anode

(3) Voltage applied to the accelerating anode

(4) Voltage applied to the control grid

97. Thermistors have _____.

(1) Positive temperature coefficient

(2) Negative temperature coefficient

(3) Zero temperature coefficient

(4) Infinite temperature coefficient

98. The expression for band width (BW) of a PCM system, where 'v' is the number of bits/sample and $f_m$ is modulating frequency, is given by

(1) $BW \geq \frac{1}{2 v f_m}$

(2) $BW \leq v f_m$

(3) $BW \geq 2 v f_m$

(4) $BW \geq v f_m$

99. The number of reflectors in Yagi-Uda antenna is/are

(1) One

(2) Two

(3) Three

(4) Four

100. The back emf of a dc motor is zero when

(1) The motor is running at its rated speed

(2) The motor is running at 80% of its rated speed

(3) The motor is about to start

(4) The motor is running at 20% of its rated speed

101. Which of the following is a primary source of energy in a nuclear power station ?

(1) Uranium

(2) Lignite

(3) Peat

(4) Natural gas

102. Which of the following types of plates is used as an earthing electrode ?

(1) Aluminium

(2) Galvanized Iron

(3) Steel

(4) Brass

103. Which of the following is used to generate power in a geothermal station ?

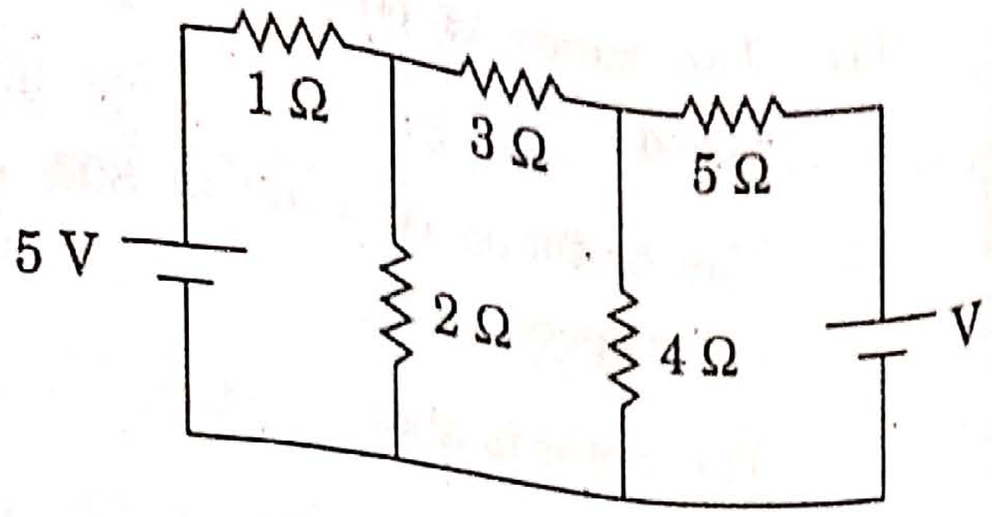
(1) Heat in the air

(2) Heat in the Ionosphere

(3) Heat inside the Earth

(4) Heat of the Sun

**104.** Find the value of V, if the current in the 3 Ω resistor is zero (0 Amp).




(1) 3·5 V

(2) 6·5 V

(3) 7·5 V

(4) 8·5 V

**105.** In superposition theorem, while considering the effect of one voltage source,

(1) All other current sources are open circuited and voltage sources are short circuited

(2) All other current and voltage sources are open circuited

(3) All other current and voltage sources are short circuited

(4) All other current sources are short circuited and voltage sources are open circuited

**106.** When voltage feedback (Negative) is applied to an amplifier, its input impedance _____.

(1) is decreased

(2) is increased

(3) remains the same

(4) None of the above

**107.** What is responsible for upper 3-dB frequency in frequency response of amplifier with transistor ?

(1) Internal capacitance of transistor

(2) Bypass capacitance

(3) Coupling capacitors

(4) Both bypass and coupling capacitors

**108.** CPU scheduler is also known as

(1) Long term scheduler

(2) Job scheduler

(3) Short term scheduler

(4) Medium term scheduler

**109.** Which among the following statements is/are true related to dynamic loading ?

A. A routine is not loaded until it is called

B. Unused routine is never loaded

C. Requires special support from the operating system

(1) A only

(2) A and B only

(3) B and C only

(4) A, B and C

**110.** For a number system, with base **n**, the number of different symbols in the number system will be

(1) n – 1

(2) n

(3) n + 1

(4) 2n

**111.** The octal equivalent of $(1100101{\cdot}001010)_2$ is

(1) 624·12

(2) 145·12

(3) 154·12

(4) 145·21

**112.** If $(84)_x$ is equal to $(64)_y$ where x and y represent base 'x' and base 'y' number systems respectively, what could be the possible values of x and y ?

(1) x = 12 y = 9

(2) x = 6 y = 9

(3) x = 12 y = 18

(4) x = 9 y = 12

**113.** When the subroutine is called, then address of the instruction following the CALL instruction is stored in the

(1) Stack

(2) Program Counter

(3) Accumulator

(4) Subroutine register

**114.** Interrupt driven I/O

(1) has its main drawback in the software overhead of interrupts

(2) may be better than busy waiting I/O, since, less hardware support is required

(3) is equal or faster than DMA for a signal word register

(4) Both (1) and (3)

**115.** The maximum number of nodes at level 'i' of a binary tree is

(1) $2^{i-1}$, $i \geq 0$

(2) $2^{i}$, $i \geq 0$

(3) $2^{i+1}$, $i \geq 1$

(4) $2 \log i$, $i \geq 1$

**116.** Evaluate the following postfix notation

A : 6, 9, 2 + * 12, 3 / –

(1) 62

(2) 66

(3) 83

(4) 72

**117.**
```
main ( )
    {
    extern int i;
        i=20;
    printf("%d", i);
    }
```

The output of the above program is

(1) 20

(2) 0

(3) Error, i undefined

(4) Garbage value

**118.**
```
main ( )
    {
     int a=6, b=10, x;
     x=a&b;
     printf("%d", x);
    }
```

The value of x is

(1) 2

(2) 10

(3) 5

(4) 7

**119.** What are the elements present in the array of the following 'C' code :

int array [5] = [5];

(1) 5, 5, 5, 5, 5

(2) 5, 0, 0, 0, 0

(3) Compilation error

(4) Declaration error

**120.** In C++, which of the following access specifier is used as a default in a class definition ?

(1) Protected

(2) Public

(3) Private

(4) Friend

**121.** Independent multi-valued dependencies can be eliminated in

(1) Boyce-Codd Normal Form

(2) Third Normal Form

(3) Fourth Normal Form

(4) Fifth Normal Form

**122.** The union operation automatically _____ unlike the select clause.

(1) Adds tuples

(2) Eliminates unique tuples

(3) Adds common tuples

(4) Eliminates duplicates

**123.** Length of ethernet address is _____ bytes.

(1) 2

(2) 4

(3) 6

(4) 16

**124.** Public key cryptography is also called

(1) Single key cryptography

(2) Symmetric key cipher

(3) Asymmetric cipher

(4) Conventional cryptography

**125.** Which layer of OSI model is responsible for compression and decompression of data ?

(1) Application layer

(2) Presentation layer

(3) Session layer

(4) Transport layer

**126.** Input impedance of an electronic voltmeter is

(1) Low

(2) High

(3) Medium

(4) Zero

**127.** What will be frequency of the signal $A \sin (4\pi t + \phi)$ ?

(1) 2 Hz

(2) 0·5 Hz

(3) 4 Hz

(4) 0·25 Hz

**128.** The modulation index in Frequency Modulation (FM) is defined as

(1) Ratio of frequency deviation to the modulating frequency

(2) Ratio of frequency deviation to the carrier frequency

(3) Ratio of carrier frequency to the frequency deviation

(4) Ratio of modulation frequency to the frequency deviation

129. The figure of merit in superheterodyne receiver can be decreased only by

(1) having first stage as Mixer

(2) having first stage as Attenuator

(3) having first stage as Amplifier

(4) having first stage as Filter

130. A transformer is a device used to

(1) Convert energy

(2) Generate energy

(3) Change the level of energy utilization

(4) Transmit the energy at same level

131. Which of the following is the correct representation of the regulation of a transformer ?

(1) $\frac{V_{2_{\text{full load}}} - V_{2_{\text{no load}}}}{V_{2_{\text{full load}}}} \times 100$

(2) $\frac{V_{2_{\text{full load}}} - V_{2_{\text{no load}}}}{V_{2_{\text{no load}}}} \times 100$

(3) $\frac{V_{2_{\text{no load}}} - V_{2_{\text{full load}}}}{V_{2_{\text{full load}}}} \times 100$

(4) $\frac{V_{2_{\text{no load}}} - V_{2_{\text{full load}}}}{V_{2_{\text{no load}}}} \times 100$

132. The armature core of a DC machine is made up of

(1) Solid aluminium

(2) Laminated aluminium

(3) Solid steel

(4) Laminated steel

133. The direction of generated EMF is determined by

(1) Lenz's law

(2) Faraday's law of electromagnetic induction

(3) Fleming's left hand rule

(4) Fleming's right hand rule

134. The power developed by a synchronous motor will be maximum when the load angle is

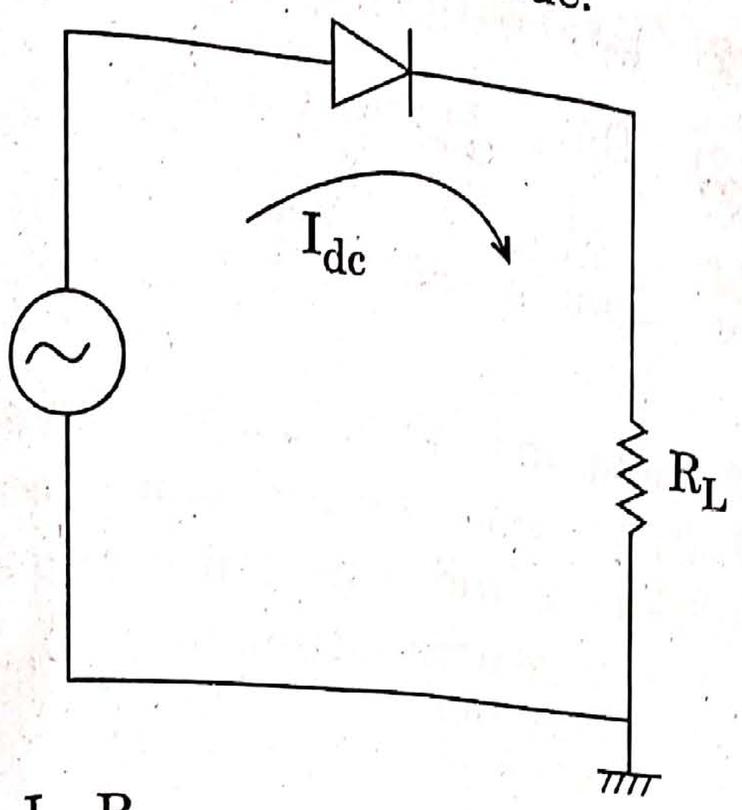
(1) Zero

(2) 90°

(3) 45°

(4) 120°

**135.** In the given half wave rectifier circuit with sinusoidal input, having ideal diode and load $R_L$, the DC current flowing through the circuit is $I_{dc}$. Calculate the DC voltage across ideal diode.




(1) $I_{dc} R_L$

(2) 0 (zero)

(3) $-I_{dc} R_L$

(4) Infinite

**136.** Which of the following device is a voltage controlled device ?

(1) Bi-Polar Junction Transistor (BJT)

(2) Field Effect Transistor (FET)

(3) Silicon Controlled Rectifier (SCR)

(4) None of the above

**137.** The Thevenin's resistance is calculated considering

(1) All current sources are open circuited and voltage sources are short circuited

(2) All current and voltage sources are short circuited

(3) All current and voltage sources are open circuited

(4) All current sources are short circuited and voltage sources are open circuited

**138.** _____ scheduling algorithm exhibits convoy effect.

(1) First Come First Serve

(2) Shortest-Job-First

(3) Round Robin

(4) Priority

**139.** In contiguous memory allocation, the following strategy can be used for effective utilization of memory

(1) First Fit

(2) Best Fit

(3) Worst Fit

(4) Last Fit

**140.** _____ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.

(1) Paging

(2) Segmentation

(3) Swapping

(4) Demand Paging

**141.** Consider the equation $(136)_8 = (a4)_b$ with 'a' and 'b' as unknown values. The possible values of 'a' and 'b' can be

(1) a = 10 b = 9

(2) a = 2 b = 15

(3) a = 3 b = 11

(4) a = 11 b = 3

**142.** An example of error correcting code is

(1) Parity check

(2) Hamming code

(3) BCD

(4) Gray code

143. Subtracting $(0101101)_2$ from $(1011001)_2$ using 2's complement, the result is

(1) 0111001

(2) 0110110

(3) 0101111

(4) 0101100

144. Which of the following statements is true ?

S1 : The dual of NAND function is NOR

S2 : The dual of XOR function is XNOR

(1) Only S1 is true

(2) Only S2 is true

(3) Both S1 and S2 are true

(4) Both S1 and S2 are false

145. _____ holds the address of the next instruction to be executed.

(1) Accumulator

(2) Program counter

(3) Address register

(4) Instruction register

146. The sequence of operations performed by CPU in processing an instruction constitutes a/an _____ cycle.

(1) Instruction

(2) Interrupt

(3) Fetch

(4) Machine

147. Which of the following data transfer is used for data transfer without the role of processor ?

(1) Synchronous

(2) Asynchronous

(3) Direct Memory Access

(4) Interrupt driven

148. A computer with cache access time of 100 nsec, and main memory access time of 1000 nsec and a hit ratio of 0·9 produces an average access time of _____.

(1) 200 nsec

(2) 400 nsec

(3) 550 nsec

(4) 1000 nsec

149. The best case running time of Bubble sort is

(1) $O(n \log n)$

(2) $O(n)$

(3) $O(\log n)$

(4) $O(n^2)$

150. A complete binary tree with 'n' nodes is represented sequentially. Then for any nodes with index i, the left child is at

(1) $2i$

(2) $2i + 1$

(3) $i + 2$

(4) $2i + 2$