POSTGRADUATE ASSISTANT EXAMINATION

PGTRB PHYSICS

PREVIOUS YEAR EXAM QUESTION PAPER WITH ANSWER

UNITWISE

8. According to Gamow's theory of alpha decay, the relation between disintegration constant 'λ', frequency of α −particle collision with the walls 'v' and the probability of transmission 'P' in each collision is
   a. $\lambda = vP$
   b. $v = \lambda P$
   c. $P = v\lambda$
   d. $\lambda P^v =$ constant

ANSWER

1.	2.	3.	4.	5.	6.	7.	8.
d	d	a	d	b	c	b	a

PGTRB PHYSICS

PREVIOUS YEAR UNITWISE QUESTION PAPER 2001-2019

UNIT X – ELECTRONICS, MICROWAVE PHYSICS AND MICROPROCESSOR

2001

1. EEPROM is a
   a. Write only memory
   b. Read only but non-erasable memory
   c. Read only but erasable memory
   d. R/W memory
2. Video RAM is a
   a. Static memory
   b. Dynamic memory
   c. Both static and dynamic memory
   d. Read only memory
3. Klystron is a device used to generate
   a. Ultrasonic waves
   b. Microwaves
   c. Sound waves
   d. Radio waves
4. Intel 8085 microprocessor is a
   a. 8 bit device
   b. 16 bit device
   c. 32 bit device
   d. 64 bit device
5. The mnemonic used to transfer contents of one register into another
   a. ADD
   b. MVI
   c. MOV
   d. LXI
6. The binary equivalent of the decimal number 51 is
   a. 101100
   b. 110001
   c. 100110
   d. 110011
7. The decimal equivalent of the hexadecimal number 12A is
   a. 325
   b. 298
   c. 123
   d. 456
8. The correct Boolean equation is
   a. $\overline{A.B} = \overline{A} + \overline{B}$
   b. $\overline{A+B} = \overline{A} + \overline{B}$
   c. $\overline{A.B} = \overline{A}\,.\overline{B}$
   d. $\overline{\overline{A}} = \overline{A}$

9. One of the following statements is CORRECT?
   a. Half adder can be used to add 3 bits
   b. The output of the AND gate in a half adder is the SUM
   c. The output of the OR gate in a full adder is the CARRY
   d. The output of the XOR gate in a full adder is the CARRY
10. In the case of a JK M/S flip – flop
   a. If the master sets, the slave resets
   b. If the master resets, the slave sets
   c. If the master sets, the slave sets
   d. The slave does not copy the master

ANSWER

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
c	c	b	a	c	d	b	a	b	a

2002-2003

1. The number of the bits which can be added by a full adder is
   a. 4
   b. 3
   c. 5
   d. 6
2. The number of stable states in a flip-flop is
   a. 1
   b. 2
   c. 3
   d. 4
3. In the case of a JK M/S flip – flop
   a. If the master is active and the slave inactive while clock is high
   b. If the master is inactive and the slave inactive while clock is low
   c. If the master is active and the slave inactive while clock is low
   d. If the master is inactive and the slave active while clock is high
4. The number of clock pulses required to store a 4-bit word in a register parallel loading is
   a. 4
   b. 2
   c. 3
   d. 1
5. The IC number of widely used decade counter is
   a. 7492
   b. 7490
   c. 7493
   d. 74161
6. Which of the following is not correct?
   Microwaves are generated by means of
   a. Magnetron oscillator
   b. Klystron oscillator
   c. Travelling wave tube
   d. Phase shift oscillator
7. In the case of 8085 microprocessor, +5v is connected to pin number
   a. 10
   b. 40
   c. 20
   d. 30
8. The instruction MOV B,A
   a. Copies A into B
   b. Copies B into A
   c. Copies A and B into another register
   d. Erase the contents of A and B
9. RAM is a
   a. Read only memory
   b. Write only memory
   c. Read –write memory
   d. Group of non- addressable registers

10. In the case of EPROM
    a. Data can be erased with ultraviolet light
    b. Data can be erased electrically
    c. MOSFET's are not used
    d. Any programmer is not required to store data
11. The binary equivalent of the hexadecimal number F8 is
    a. 10101010
    b. 11111000
    c. 11000011
    d. 10111110
12. The Gray code for the binary number 1011 is
    a. 1110
    b. 1010
    c. 0101
    d. 1100
13. Which is not CORRECT in the following?
    The output of a 3input AND gate is, if
    a. 2 inputs are 0 and one input is 1
    b. One input is 0 and 2 input are 1
    c. All the inputs are 1
    d. All the inputs are 0
14. Which of the following is CORRECT by De Morgan's theorem?
    a. $\overline{A+B} = \overline{A} + \overline{B}$
    b. $\overline{A.B} = \overline{A}.\overline{B}$
    c. $\overline{A+B} = \overline{A}.\overline{B}$
    d. $\overline{A.B} = \overline{A} + \overline{B}$
15. Which is wrong in the following?
    An operational amplifier is a
    a. Direct coupled high gain amplifier
    b. Device used to perform many linear functions
    c. Device to which feedback is added to control the overall response characteristics
    d. Device with infinite output resistance
16. If A_d and A_c represent the gains of a differential amplifier for the difference signal and common mode signal respectively, then its CMRR is given by
    a. $\left|\frac{A_d}{A_c}\right|$
    b. $\frac{(A_d + A_c)}{(A_d - A_c)}$
    c. $\frac{(A_d - A_c)}{(A_d + A_c)}$
    d. $\frac{A_d}{A_c}$
17. If the input signal is V= $\sin \omega t$ in an operational differentiator, the output will be
    a. $\cos \omega t$
    b. $\omega \cos \omega t$
    c. –RC $\omega \cos \omega t$
    d. $-\omega \cos \omega t$

18. A comparator is a
    a. Linear digital system
    b. Non - Linear digital system
    c. Linear analog system
    d. Non - Linear analog system
19. Hartley oscillator is a type of
    a. Harmonic oscillator
    b. Relaxation oscillator
    c. Multi vibrator
    d. Pulse generator
20. The simplified form of $\overline{A}\,\overline{B} + \overline{A}\,B + AB + A\overline{B}$ Is
    a. AB
    b. $\overline{A}\,B$
    c. $A\overline{B}$
    d. 1

ANSWER

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
b	b	a	d	b	d	b	a	c	a
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
b	a	c	d	d	a	c	d	a	d

2003-2004

1. The decimal equivalent of 10011_2 is
   a. 19_{10}
   b. 107_{10}
   c. 0.625_{10}
   d. 625_{10}
2. According to Boolean algebraic laws
   a. A.O = A
   b. A.O = 1
   c. A.O = $\overline{A}$
   d. A.O = 0
3. A.B = B.A is called
   a. Associative law
   b. Commutative law
   c. Law of complementation
   d. Distributive law
4. Which of the following is correct by De Morgan's theorem?
   a. $\overline{A.B} = A + B$
   b. $\overline{A.B} = \overline{A} + \overline{B}$
   c. $\overline{A.B} = \overline{A}\,.\overline{B}$
   d. $\overline{A.B} = \overline{A + B}$
5. A group of D flip-flops connected in parallel are
   a. Registers
   b. Counters
   c. Adders
   d. Subtractors
6. The number of memory locations which the 8085 microprocessor can address is
   a. 2^{34}
   b. 2^{20}
   c. 2^{16}
   d. 2^{32}
7. The purpose for which the parity bit is added is
   a. Coding
   b. Decoding
   c. Error detection
   d. Controlling
8. The space between anode and cathode in magnetron oscillator is
   a. Strapping
   b. Critical space
   c. Cavity
   d. Interaction space
9. The simplest radiator is called
   a. Electric dipole
   b. Yagi antenna
   c. Vhf antenna d. All of these

2004-2005

1. The system in which digits are expressed in powers of 10 is
   a. Binary
   b. Decimal
   c. Octal
   d. Hexadecimal
2. Conversion of Gray code 1011 to binary is
   a. 1101
   b. 1001
   c. 1111
   d. 0011
3. According to Boolean algebra
   a. A+A = 0
   b. A+A = 1
   c. A+A = $\overline{A}$
   d. A+A = A
4. The purpose for which the parity bit is added is
   a. Coding
   b. Decoding
   c. Error detection
   d. Controlling
5. In 8085 the data bus and address bus are
   a. Multiplexed in higher byte
   b. Multiplexed in lower byte
   c. Multiplexed entirely
   d. Not Multiplexed
6. Which of the following is a zero address bus are
   a. PUSH
   b. MVI 08
   c. XNOR
   d. JNZ 4105
7. The radiation resistance of a half wave antenna is
   a. 20 Ω
   b. 120 Ω
   c. 80 Ω
   d. 40 Ω
8. Word comparator make use of
   a. NAND
   b. XOR
   c. XNOR
   d. NOR
9. A flip-flop is also called
   a. Monostable multivibrator
   b. Bistable multivibrator
   c. Astable multivibrator
   d. Comparator

10. The process of generating binary code is
    a. Encoding
    b. Multiplexing
    c. Coding
    d. Decoding
11. A device which converts one from of energy into another is called
    a. Multivibrator
    b. Comparator
    c. Transducer
    d. Amplifier
12. The addressing mode in which the operand is specified within the instruction itself is
    a. Direct addressing
    b. Immediate addressing
    c. Register addressing
    d. Register indirect addressing
13. The content of PROM can be erased using
    a. U-V light
    b. LASER light
    c. Ordinary light
    d. IR light
14. Which of the following is correct by De Morgan's theorem?
    a. $\overline{A+B} = A.B$
    b. $\overline{A+B} = \overline{A}$ .B
    c. $\overline{A+B} = \overline{A}.\overline{B}$
    d. $\overline{A+B} = \overline{A} + \overline{B}$
15. Wien – bridge oscillator is
    a. AF oscillator
    b. Quadrature oscillator
    c. Phase shift oscillator
    d. Square wave oscillator
16. Schmitt trigger converts irregular waveforms to
    a. Sawtooth
    b. Triangular
    c. Square
    d. Sine
17. The voltage gain of an ideal Op – Amp is
    a. 1
    b. High
    c. Zero
    d. Infinity
18. In a voltage follower
    a. $V_0 = V_S$
    b. $V_0 > V_S$
    c. $V_0 < V_S$
    d. $V_0 = 0$

19. Choose the odd one?
    a. Display screen
    b. Keyboard
    c. Floppy disc with instructional material
    d. Printer

(2003-2004) ANSWER

1.	2.	3.	4.	5.	6.	7.	8.	9.
a	d	b	b	b	c	c	c	b

(2004-2005) ANSWER

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
b	a	d	c	b	d	c	b	b	a
11.	12.	13.	14.	15.	16.	17.	18.	19.	
c	a	a	c	a	c	d	a	b	