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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Supplementary Examination May 2023 (2019 Scheme)

Course Code: MRT308

Course name: COMPREHENSIVE COURSE WORK

Max. Marks: 50 Duration: 1Hour

Instructions: ***(1) Each question carries one mark. No negative marks for wrong answers***
(2) Total number of questions: 50
(3) All questions are to be answered. Each question will be followed by 4 possible answers of which only ONE is correct.
(4) If more than one option is chosen, it will not be considered for valuation.

1. Which of the following is not the operating characteristics of Dc generator?

a) No-load characteristics b) Load characteristics c) External characteristics d) Internal characteristics

2. Characteristics drawn at Ia = 0 is also called as _____

a) Magnetization characteristics b) Non-magnetization characteristics c) Anti-magnetization characteristics d) Cannot be determined

3. Characteristics of a DC generator drawn across Vt vs If at rated armature current and constant speed, is called as _____

a) Load characteristics b) No-load characteristics c) External characteristics d) Armature characteristics

4. While conducting OCC, in order to avoid hysteresis loop, in which direction If should be increased?

a) -ve direction b) +ve direction c) In any direction d) In both direction there exists hysteresis loop

5. For machine tools, which DC motor can be used?

a) DC Series motor b) DC Shunt motor c) DC cumulative compound motor d) DC differential compound motor

6. In a DC shunt motor, speed is related to armature current as _____

a) Directly proportional to the armature current b) Proportional to the square of the current c) Independent of armature current d) Inversely proportional to the armature current

7. In a DC shunt motor for zero armature current we get speed _____

a) Non-zero and minimum b) Zero c) Non-zero and maximum d) Doesn't depend on armature current

8. What will be the effect of opening of field of a DC shunt motor while motor is running?

a) The speed of motor will be reduced
b) The armature current will reduce
c) The motor will attain dangerously high speed
d) The motor will continue to constant speed

9. Which DC motor is generally preferred for cranes and hoists?

a) Series motor
b) Shunt motor
c) Cumulatively compounded motor
d) Differentially compounded motor

10. Which of the following motor has the poorest speed regulation?

a) Shunt motor
b) Series motor
c) Differential compound motor
d) Cumulative compound motor

11 Oscillators are used to _____ AC voltage.

a) Prevent
b) Generate
c) Amplify
d) Rectify

12 Oscillator _____ an AC input for giving an AC output.

a) Doesn't need
b) Need
c) Doesn't need at lower frequencies
d) Doesn't need at higher frequencies

13 The output of a stable oscillator have _____

a) Constant amplitude
b) Varying amplitude
c) Constant amplitude at high frequencies only
d) Constant amplitude at low frequencies only

14 RC phase shift oscillators contain a minimum of _____ Phase shift network.

a) 1
b) 2
c) 3
d) 0

15 One phase shift network of an RC phase shift oscillator contain _____ capacitor.

a) 1
b) 2
c) 3
d) 0

16 What will be the output from a D flip – flop if the clock is low and D = 0?

a) 0
b) 1
c) No change
d) Toggle between 0 and 1

17 What value is to be considered for a "don't care condition"?

a) 0
b) 1
c) Either 0 or 1
d) Any number except 0 and 1

18 What is the group of 1s present in 8 cells of a K – map called?

a) Pair
b) Quad
c) Octet
d) Octave

19 Which of these flip – flops cannot be used to construct a serial shift register?

a) D – flip flop
b) SR flip – flop
c) T flip – flop
d) JK flip – flop

20 What kind of operation occurs in a J – K flip flop when both inputs J and K are equal to 1?

a) Preset operation
b) Reset operation
c) Clear operation
d) Toggle operation

21 Which of the following motor rotates in discrete angular steps?

a) Servo motor b) DC motor c) Stepper motor d) Linear Induction Motor (LIM)

22 Stepper motor runs in response to

a) a programmed sequence of input electrical pulses. b) Pulse Width Modulation (PWM). c) Feedback signal. d) Pulse Position Modulation (PPM).

23 Rotor of a variable reluctance stepper motor is constructed of _____ material with salient poles.

a) Ferromagnetic b) Diamagnetic c) Non-magnetic d) Paramagnetic

24 The phenomenon of generation of lift by rotating an object placed in a free stream is known as

a) Coanda effect b) Magnus effect c) Scale effect d) Buoyancy effect

25 Hall Effect is clearly visible in _____

a) Pure conductors b) Semiconductors c) Super conductors d) Metals

26 Force exerted by magnetic field in Hall Effect transducers is _____

a) Lorentz force b) Hall Effect force c) Magnetic force d) Electric force

27 Which of the following represents correct expression for Lorentz force?

a) BeV b) BV c) Ev d) B

28 Which of the following represents the output of Hall Effect transducer?

a) Hall potential b) Emf c) Applied voltage d) Lorentz Voltage

29 Hall Effect transducer can be used to measure _____

a) Magnetic field b) Angular displacement c) Linear displacement d) All of the mentioned

30 Hall Effect is a/an _____

a) Electronic b) Magnetic c) Galvanic d) Ionizing

31 Which of the following addressing method does the instruction, MOV AX,[BX] represent?

a) register indirect addressing mode b) direct addressing mode c) register addressing mode d) register relative addressing mode

32 Which of the following is true about microprocessors?

a) It has an internal memory b) It has interfacing circuits c) It contains ALU, CU, and registers d) It uses Harvard architecture

33 Which of the following is the correct sequence of operations in a microprocessor?

a) Opcode fetch, memory read, memory write, I/O read, I/O write b) Opcode fetch, memory write, memory read, I/O read, I/O write c) I/O read, opcode fetch, memory read, memory write, I/O write d) I/O read, opcode fetch, memory write, memory read, I/O write

34 Which of the following is not a property of TRAP interrupt in microprocessor?

a) It is a non-maskable interrupt
b) It is of highest priority
c) It uses edge-triggered signal
d) It is a vectored interrupt

35 Which of the following is a special-purpose register of microprocessor?

a) Program counter
b) Instruction register
c) Accumulator
d) Temporary register

36 Which of the following circuit is used as a special signal to demultiplex the address bus and data bus?

a) Priority Encoder
b) Decoder
c) Address Latch Enable
d) Demultiplexer

37 When the microcontroller executes some arithmetic operations, then the flag bits of which register are affected?

a) PSW
b) SP
c) DPTR
d) PC

38 How are the status of the carry, auxiliary carry and parity flag affected if the write instruction
MOV A,#9C
ADD A,#64H

a) CY=0,AC=0,P=0
b) CY=1,AC=1,P=0
c) CY=0,AC=1,P=0
d) CY=1,AC=1,P=1

39 If we push data onto the stack then the stack pointer

a) increases with every push
b) decreases with every push
c) increases & decreases with every push
d) none of the mentioned

40 How many bytes of bit addressable memory is present in 8051 based microcontrollers?

a) 8 bytes
b) 32 bytes
c) 16 bytes
d) 128 bytes

41 Which of the following statement is true about Feedback control system?

a) Equally sensitive to forward feedback path parameter changes
b) Insensitive to both forward and feedback path parameter changes
c) Less sensitive to feedback path parameter changes than to forward path parameter changes
d) Less sensitive to forward path parameter changes than to feedback path parameter changes

42 In pneumatic control systems the control valve used as the final control element converts

a) Position change to pressure signal
b) Electric signal to pressure signal
c) Pressure signal to electric signal
d) Pressure signal to position change

43 Feedback control system is basically _____

a) Band pass filter
b) Band stop filter
c) High pass filter
d) Low pass filter

44 Effect of feedback on sensitivity is minimum in:

a) Closed loop control system
b) Open and closed loop control systems
c) Open loop control system
d) None of the mentioned

45 Which one of the following statements is not correct?

a) Root loci can be used for analyzing stability and transient performance
b) Root loci provide insight into system stability and performance
c) Shape of the root locus gives idea of type of controller needed to meet design specification
d) Root locus can be used to handle more than one variable at a time

46 The main objective of drawing root locus plot is :

a) To obtain a clear picture about the open loop poles and zeroes of the system
b) To obtain a clear picture about the transient response of feedback system for various values of open loop gain K
c) To determine sufficient condition for the value of 'K' that will make the feedback system unstable
d) Both b and c

47 The addition of open loop poles pulls the root locus towards:

a) The right and system becomes unstable
b) Imaginary axis and system becomes marginally stable
c) The left and system becomes unstable
d) The right and system becomes unstable

48 A system has poles at 0.01 Hz, 1 Hz and 80Hz, zeroes at 5Hz, 100Hz and 200Hz. The approximate phase of the system response at 20 Hz is :

a) -90° b) 0° c) 90° d) -180°

49 What is the value of M for the constant M circle represented by the equation $8x^2+18x+8y^2+9=0$?

a) 0.5 b) 2 c) 3 d) 8

50 In a bode magnitude plot, which one of the following slopes would be exhibited at high frequencies by a 4^{th} order all-pole system?

a) -80Db/decade b) -40 Db/decade c) 40 Db/decade d) 80 Db/decade

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