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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree Examination June 2022 (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. The Condition for maximum efficiency of a transformer

a) Eddy current losses=stray losses b) Hysteresis losses=eddy current losses c) Copper losses=0 d) Variable losses=constant losses

2. For starting a DC Motor a starter is required for

a) It limits the speed of motor b) It limits the starting current to a safe value c) It starts the motor d) None of the above

3. Armature reaction in a generator results in

a) Demagnetization of leading pole tip and magnetization of trailing pole tip b) Demagnetization of trailing pole tip and magnetization of leading pole tip c) Demagnetizing the center of all poles d) Magnetizing the center of all poles

4. The critical resistance of the D.C. generator is the resistance of

a) Field b) Brushes c) Armature d) Load

5. The commutator segments are connected to the armature conductors by means of

a) Copper lugs b) Resistance wires c) Insulation pads d) Brazing

6. What is the function of a transformer?

a) Transformer is used to step down or up the AC voltages and currents b) Transformer is used to step down or up the DC voltages and currents c) Transformer converts DC to AC voltages d) Transformer converts AC to DC voltages

7. Transformer ratings are given in

a) a) HP b) kVA c) kVAR d) Kw

8. An induction motor is identical to

a) D.C. compound motor b) D.C. series motor c) Synchronous motor d) Asynchronous motor

9. What will happen if the relative speed between the rotating flux of stator and rotor of the induction motor is zero?

a) The slip of the motor will be 5% b) The rotor will not run c) The rotor will run at very high speed d) The torque produced will be very large

10. In a synchronous motor, damper windings are provided on

a) Stator frame b) Rotor shaft c) Pole faces d) None of the above

11 The maximum efficiency of resistance loaded class A power amplifier is

a) 5% b) 35% c) 25% d) 50%

12 An oscillator employs ..... feedback

a) Positive b) Negative c) Neither positive nor negative d) Data Insufficient

13 In a multiplexer the output depends on its

a) Data inputs b) Select inputs c) Select outputs d) Enable pin

14 How many select lines are required for a 1-to-8 demultiplexer?

a) 2 b) 3 c) 4 d) 5

15 Which A/D converter is considered to be simplest, fastest and most expensive?

a) Servo converter b) Counter type ADC c) Flash type ADC d) All of the mentioned

16 DeMorgan's theorem states that _____

a) (AB)' = A' + B' b) (A + B)' = A' * B c) A' + B' = A'B' d) (AB)' = A' + B

17 The prime implicant which has at least one element that is not present in any other implicant is known as

a) Essential Prime Implicant b) Implicant c) Complement d) Prime Complement

18 What is Barkhausen criterion for oscillation?

a) Aß> 1 b) Aß< 1 c) Aß = 1 d) Aß ≠ 1

19 Reflected binary code is also known as _____

a) BCD code b) Binary code c) ASCII code d) Gray Code

20 Convert binary number into gray code: 100101.

a) 101101 b) 001110 c) 110111 d) 111001

21 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

22 Which of the following flag is used to mask INTR interrupt?

a) Zero flag b) Auxiliary carry flag c) Interrupt flag d) Sign flag

23 How many address lines are present in 8086 microprocessor?

a) 16 b) 20 c) 32 d) 40

24 Which of the following is not a status flag in microprocessor?

a) Overflow flag b) Direction flag c) Interrupt flag d) Index flag

25 _____ converts the programs written in assembly language into machine instructions.

a) Machine compiler b) Interpreter c) Assembler d) Converter

26 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

27 Instructions which won't appear in the object program are called as _____

a) Redundant instructions b) Exceptions c) Comments d) Assembler Directives

28 Which of the following is not a condition flag?

a) Trap flag b) Auxiliary carry flag c) Parity flag d) Zero flag

29 8051 series has how many 16 bit registers?

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

30 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

31 The ideal hydraulic rotary actuator provides shaft torque T, which is

a) Equal to displaced volume measured b) Inversely proportional to displaced volume measured c) Proportional to differential pressure d) Inversely proportional to differential pressure

32 Sensor effectiveness depends on _____ parameter.

a) Sensitivity b) Radiation c) Resistivity d) All the above

33 Sensor provides output signal depending on _____.

a) Input b) Physical quantity c) Both A and B d) None of the above

34 A linear transfer function is also called as

a) System transfer function b) Component transfer fucntion c) Constant transfer function d) Both a and c

35 The basic function of the spring in a control valve is to

a) Characterize flow b) Oppose the diaphragm so as to position the valve according to signal pressure c) Close the valve if air failure occurs d) Open the valve if air failure occurs

36 Proximity sensors are used to

a) Detect non magnetic but conductive material b) Measure strain c) Measure distance d) Measure temperature

37 A valve positioned

a) Takes the place of a cascade control system b) Provides more precise valve position c) Makes a pneumatic controller in necessary d) Provides a remote indication of valve position

38 The characteristic that provides an output with respect to the relation with the input is called as _

a) Calibration of a system b) Response of a system c) Characteristic relation of a system d) Instrumentation of a system

39 The process of establishment of a relationship between the input to the instrument and output from the instrument is called as

a) Static sensitivity b) Static characterization c) Static accuracy d) Static calibration

40 In which stage the measurement system comes in contact with the measurand or the quantity to be measured?

a) Transducer Stage b) Signal Processor Stage c) Output Stage d) None of the above

41 When the gain of the control system increases, the steady-state error of the system

a) Decreases b) Increase c) Remains unchanged d) May increase or decrease

42 The steady-state error is

a) A independent of the type of input b) A function of the transient response c) Zero for all inputs to type 1 system d) Decreased by increasing gain.

43 Benefits of feedback

a) Performance of system is greater b) Need for system much larger path gain and system instability c) Controlled variable accurately follows the desired value d) Affected by parameter variations

44 The bode plot is used to analyse which of the following?

a) Minimum phase network b) Lag lead network c) Maximum phase network d) All phase network

45 The bode plot is a plot relating log w with magnitude in ecibel and

a) Phase angle b) 90^0 c) 180^0 d) None of the above

46 The Routh-Hurwitz criterion cannot be applied when the characteristic equation of the system contains any coefficients which is

a) Negative real and exponential functions of s b) Negative real, both exponential and sinusoidal function of.s. c) Both exponential and sinusoidal functions of s d) Complex, both exponential and sinusoidal functions of s.

47 The given characteristic polynomial $S^4 + S^3 + 2s^2 + 2s + 3 = 0$ has

a) Zero roots in RHS of s-plane b) One root in RHS of s-plane c) Two roots in RHS of s-plane d) Three roots in RHS of s-plane

48 Which of the following is used in time domain technique in control system

a) Routh-Hurwitz b) Bode plot c) Root locus d) Nyquist criterion

49 Which among the following is a disadvantage of modern control theory?

a) Implementation of optimal design b) Transfer function can also be defined for different initial conditions c) Analysis of all systems take place d) Necessity of computational work

50 Which among the following is a unique model of a system?

a) Transfer function b) State variable c) Both a and b d) None of the above

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