Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S,FE) Examination December 2025 (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 function of commutation in a dc machine is

a) To provide easy speed control b) To change ac voltage into dc voltage c) To change dc voltage into dc voltage d) To improve commutation

2. The function of equalizing ring in lap wound dc generator is

a) To increase the efficiency of the machine b) To avoid short circuit current c) To neutralize the armature reaction d) To help get sparklers commutation

3. What is the working principle of a Transformer

a) Transformer works on the principle of self induction b) Transformer works on the principle of mutual induction c) Transformer works on the principle of ampere law d) Transformer works on the principle of coulomb law

4. The purpose of the transformer core is to provide _____

a) Low reluctance path b) High inductive path c) High capacitive path d) High reluctance path

5. Mechanically air gaps in induction motor are kept very low to avoid _____

a) lower power factor b) lagging nature c) magnetizing current d) all of the mentioned

6. The great advantage of the double squirrel-cage induction motor over single cage rotor is that its _____

a) efficiency is higher b) power factor is higher c) slip is larger d) starting current is lower

7. Ideally the voltage regulation of an alternator should be _____

a) zero b) infinite c) 50% d) 100%

8. Emf method is also known as _____

a) pessimistic method b) optimistic method c) zero power factor method d) none of the mentioned

9. Which of the following isn't a type of rectifier

a) Precision Half-wave Rectifier b) Bridge Rectifier c) Peak Rectifier d) None of the mentioned

10. For a half wave or full wave rectifier the Peak Inverse Voltage of the rectifier is always

a) Greater than the input voltage b) Smaller than the input voltage c) Equal to the input voltage d) Greater than the input voltage for full wave rectifier and smaller for the half wave rectifier

11 The use of amplifier in a circuit is to _____ for input signal.

a) Provide a phase shift b) Provide frequency enhancement c) Provide strength d) Make circuit compatible

12 Unit of power rating of a transistor is expressed in _____

a) Watts b) KWh c) W/s d) Wh

13 The sinusoidal oscillator is also called _____

a) LC oscillator b) Harmonic oscillator c) RC oscillator d) Crystal oscillators

14 Which type of oscillators is used in timing elements?

a) RC oscillator b) LC oscillator c) Crystal oscillator d) Weinbridge oscillators

15 Which filter type is called a flat-flat filter

a) Cauer filter b) Butterworth filter c) Chebyshev filter d) Band-reject filter

16 Which filter performs exactly the opposite to the band-pass filter

a) Band-reject filter b) Band-stop filter c) Band-elimination filter d) All of the mentioned

17 A universal logic gate is one which can be used to generate any logic function. Which of the following is a universal logic gate

a) OR b) AND c) XOR d) NAND

18 Total number of inputs in a half adder is _____

a) 2 b) 3 c) 4 d) 1

19 What is a multiplexer

a) It is a type of decoder which decodes several inputs and gives one output b) A multiplexer is a device which converts many signals into one c) It takes one input and results into many output d) It is a type of encoder which decodes several inputs and gives one output

20 When both inputs of a J-K flip-flop cycle, the output will _____

a) Be invalid b) Change c) Not change d) Toggle

21 Which of the following is correct for tactile sensors

a) Touch sensitive b) Pressure sensitive c) Input voltage sensitive d) Humidity sensitive

22 Smallest change which a sensor can detect is _____

a) Resolution b) Accuracy c) Precision d) Scale

23 Which is required to strengthen the signal sufficiently to drive the actuator

a) Modulator b) Regulator c) Amplifier d) Abstractor

24 Which type of actuators use hydraulic fluid to amplify the controller command signal

a) Magnetic b) Pneumatic c) Electric d) Hydraulic

25 If we record any music in any recorder, such types of process is called _____

a) Multiplexing b) Encoding c) Decoding d) Demultiplexing

26 Can an encoder be called a multiplexer

a) No b) Yes c) Sometimes d) Never

27 Which of the following can be measured by the use of a tacho-generator

a) Acceleration b) Speed c) Speed and acceleration d) Displacement

28 The Coanda effect describes the tendency of a fluid jet to:

a) Move in a straight line due to inertia. b) Adhere to a curved surface instead of separating c) Reverse its flow direction rapidly d) Compress significantly under pressure

29 What is the SI unit of pressure

a) Pascal b) Barye c) Atm d) Newton

30 Which is an example of pressure sensor

a) MSP430G2ET b) CMCP793V-500 c) SLB700A/06VA d) BMP180

31 What is Microprocessor

a) A multipurpose PLD that accepts binary data as input b) A multipurpose PLD that accepts an integer as input c) A multipurpose PLD that accepts whole numbers as input d) A multipurpose PLD that accepts prime numbers as input

32 Which of the following is a type of microprocessor

a) CISC b) RISC c) EPIC d) All of the mentioned

33 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

34 Which of the following architecture is followed by general-purpose microprocessors

a) Von Neumann architecture b) Harvard architecture c) None of the mentioned d) All of the mentioned

35 Which of the following devices are specifically being used for converting serial to parallel and from parallel to serial respectively

a) microcontroller b) timers c) counters d) registers

36 The coded object modules of the program to be assembled are present in

a) .ASM file b) .OBJ file c) .EXE file d) .OBJECT file

37 What is a compiler

a) system program that converts instructions to machine language b) system program that converts machine language to high-level language c) system program that writes instructions to perform d) None of the mentioned

38 Which of the following error can a compiler check

a) Logical Error b) Syntax Error c) Both Logical and Syntax Error d) Compiler cannot check errors

39 How many control lines are present in analog to digital converter in addition to reference voltage

a) Three b) Two c) One d) Four

40 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

41 Effect of feedback on sensitivity is minimum in:

a) Open loop control system b) Closed loop control system c) None of the mentioned d) Both of the mentioned

42 The closed system has higher _____ than open loop control system, this implies increased speed of response

a) Gain b) Bandwidth c) Frequency d) Speed

43 Multiple signals as input can be used in which systems

a) Feedback systems b) Non feedback systems c) Feedforward systems d) None of the mentioned

44 A system has a single pole at origin. Its impulse response will be:

a) Constant b) Ramp c) Decaying exponential d) Oscillatory

45 The initial response when output is not equal to input is _____

a) Error response b) Transient response c) Dynamic response d) Static response

46 A system with GM = 0 and PM = 0 is:

a) Highly Stable b) Unstable c) Marginally Stable d) Oscillatory

47 Routh Hurwitz criterion gives:

a) Number of roots in the right half of the s-piane b) Value of the roots c) Number of roots in the left half of the s-plane d) Number of roots in the top half of the s-plane

48 A lag compensator is used to:

a) Increase system speed and bandwidth. b) Improve transient response and stability margin. c) Improve steady-state performance (reduce steady-state error). d) Reduce system noise

49 A lag-lead compensator is useful when:

a) Only steady-state error needs improvement.

b) Only transient response needs improvement.

c) A system is unstable and needs both stability and bandwidth improvement.

d) The system has high noise levels.

50 Propagation Delay is determined by

a) The speed of the processor

b) The number of routers

c) The distance and speed of light/signal

d) The packet size

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