Yashwantrao Chavan college of Science, karad

B. Sc. Computer Science Entire Part-II (Sem.-III)

Subject : ELECTRONICS

Paper VI- Computer Instrumentation

Question Bank

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Q.1 Select Correct Alternative for Each of The Following questions.

1. The art and science of using instruments for measurements or control is known as___.

a) Measurement b) Instrument

c) Instrumentation d) Observation

2. A measuring system consists of

a) Sensors b) Variable conversion elements
c) Signal processing elements d) All of these

3. In calibration the instrument which calibrated is known as_.
a) Test b)Standard c) Sensor d) None of these

4. The process of determine the amount, degree or capacity by comparison with the excepted standard of the system is _____
a) Measurement b) Instrumentation
c) Instrument d) Calibration

5. A_is physical representation of unit of measurement.

a) Accurancy b) Standard

c) Error d) None of these

6. The difference between the largest and smallest reading of a measured is called as____.

a) Linearity b) Range
c) Accurancy d) Span

7. The algebraic difference between indicated value and actual or true value is _____.

a)Accurancy b) Precision c) Resolution d) Error

8)The ratio of change in resistance to the change in length is known as

a) Sensitivity b) Gain

c) Accurancy d) Gauge factor

9.The LVDT is ___type of transducer.

a)Active b) Passive

c) Resistive d) None of these

10.Which transducer is known as 'self-generating transducer'?

a) Active transducer b) Passive transducer
c) Secondary transducer d) Analog transducer

11.material is used for construction of RTD transducer.

a) Platinum b) Plastic
c) Wood d) None of these

12.In construction of optical transducer_material is used.

a)Gold b) Copper

c) Silver d) Cds

13.Which of the following is an analog transducer?

b) Encoders b) Strain gauge
c) Digital tachometers d) Limit switches

14.A transducer that converts measurand into the form of pulse is called___.

c) Active transducer b) Analog transducer
c) Digital transducer d) Pulse transducer

15.The input impedance of instrumentation amplifier is_.

d) Zero b) High c) Low d) None of these

16.Filters are classified as

e) Analog or digital b) Passive or active
c) Audio or radio frequency d) All of the mentioned

17.In instrumentation system, the first stage is__section.

a) ADC b) DAC c) Transducer d) Signal Conditionin

17. ___controlled DC servomotor is generally used.

b) Field b) Armature c) Stepper d) None of these

18.An electrical filter is a

c) Phase-selective circuit b) Frequency-selective circuit

c) Filter-selective circuit d) None of the mentioned

19.What are the most commonly used active filters?

d) All-pass filters b) Low pass and High pass filters

c) Band pass and Band reject filters d) All of the mentioned

20.What is the advantage of using flash type A/D converter?

e) High speed conversion b) Low speed conversion

c) Nominal speed conversion d) None of the mentioned

21. No change in resistance is observed in_____transducer.

f) RTD b) Thermocouple

c)LDR d) Strain Gauge

22.In R-2R type DAC, only_____values of resistor's are required.

g) One b) Two

c) Three d) Four

23.In single channel data acquisition system_____process parameter is analyzed.

h) One b) Two

c) Three d) Four

24.In four inputs-one output (4:1) multiplexer,___select lines are required.

i) One b) Two

c) Three d) Four

25.In data acquisition system,is necessary to freeze the input signalduring conversion.

j) ADC b) DAC

c) Sample and hold circuit d) Transducer

26.Data logger is used for__.

k) Processing the data b) Storage of data

c) Display of data d) All of above

27.A multichannel Data Acquisition system___process parameter is analyzed.

l) One b) many

c) no d) none of these

28.In DAS, the rate at which input data is scanned is known as_____rate.

a)Baud b) Conversion

c) Sampling d) none of these

29.In sample –Hold circuit_is used to hold sampled value.

a)MOSFET b) Capacitor

c) Op.amp. d) Diode

30.In speed control of DC motor, tachometer is used to measure_____.

a)Pressure b) Speed

c) Temperature d) Heat

31.An AC servomotor, stator carrier two winding which displaced by _____inspace from each other.

a) 0^0 b) 90^0

c) 180^0 d) 360^0

32.The time required to switch from hold period to signal period is known as_____.

a)Aperture time b) acquisition time

c) Hold time d) none of these

33.To design 8:1 multiplexer the control lines are_.

m) 1 b) 2

c) 3 d) 4

34..In_type display each line is scanned successively with electron beam.

n) Non inter laced b) interlaced

c) LCD d) none of these

35..In DAS___is necessary to freeze the IP signal during convert.

o) ADC b) DAC

c) sample &hold ckt. d) trace

36.The speed of rotating shaft is measured by digital__meter.

p) digital phase b) digital tachometer

c) digital frequency d) digital universal

37.In 4:1 multiplexer the no of control lines are_

q) 1 b) 4

c) 3 d)2

38.In sample and hold circuit____is used as switch.

r) Diode b)capacitor

c) FET d) none of these.

39.In Multichannel DAS selection and controlling is obtained by ___

a)S/H b) Programmer logic

c)ADC d) DAC

40.In LCD display construction _____material is used.

a)Phosphor b) zinc oxide

c) cholestic d) iron oxide

41.The universal counter is used to measure ___

a) Time period b) frequency

c) Time interval d) All above

42.Relation between two parameters is observed in____.

a)Strip chart b) potentiometer

c) x-y d) none of these

43.Digital multimeter is used to measure ___voltage current

a)AC b) DC c) both AC and DC d) None of these

44.In speed control DC motor speed, the motor is_____proportional to voltage of armature winding.

a) Directly b) Inversely

c) both a) & b) d) None of these

45.X-Y Recorder recordes electrical signal with respect to____.

a)Other variable b) Temperature

c) Time d) None of these

46.To measure the Frequency and Period of signal is used.

a) Universal Counter b) Frequency meter

c) Both a) & b) d) Multimeter

47. _____Digital phase meter is used to measure difference between

a. One b) Two

c) Three d) None of these

48.Signal conditioner is used for__the voltage.

b. Attenuating b) keeping constant

c) Boosting d) None of these

49.In DAS, the rate at which input data is scanned is known as_____rate.

c. Baud b) conversion

c) Sampling d) None of these

Q.2 Long type Questions.

1. What is temperature Transducer? Explain thermocouple in details.

2. Write a note on strain gauge; derive an expression of its gauge factor.

3. How RTD works as a temperature Transducer? Explain why platinum is widely usedas RTD.

4. What is LVDT? Where it is used? Explain the operating principle of LVDT.

5. Draw the Instrumentation amplifier using Op-amp. Explain in detail also and deriverelation of output.

6. What are types of DC Servomotor? Explain controlling of dc servomotor in details.

7. Draw the block diagram of CRO. Explain each block in details.

8. State the different types of recorders. Explain any one with figure.

9. What is meant by DAC; Draw internal block diagram of IC 0809 and explain.

10. What is ADC? What are types of ADC? Explain any one ADC method?11.Draw the neat labeled block diagram of general data acquisition system.

12. Explain the mechanism of DSO with block diagram.

13. Draw the structure of LED display and explain its operation. Explain the sevensegment LED display.

14. With the help of block diagram explain the working of digital multiplexer.

15. Explain the operation of principle of LCD display what are the advantages and disadvantages of it over the LED display? What are the important features of LCD?

Q.3 Short type Questions.

1. What is meant by measurement? What is meant by instrument? Write a note onclassification of instrument.

2. Give the transducer classification in details.

3. Define a) Errorb) Precision c) Sensitivity d) Linearity

4. What are the different characteristics for transducer? Explain any four.

5. Write a note on RTD.

6. Explain the principle and working of thermocouple.

7. Compare RTD and Thermocouple transducerPrecision d) Sensitivity

8. Draw Circuit diagram of differential bridge amplifier and explain it.

9. Explain dual slop method of ADC.

10. Write a note on Reed Relay.

11. Explain working of R-2R DAC method.
12. Write a note on Dry Reed relay and Ferrite reed relay.
13. What is ADC? Explain successive approximation ADC method.
14. Write a note on single channel data acquision system.
15. Draw the block of general Data acquision system and explain the block.
16. With block diagram explain multichannel data logger system.
17. Explain the operation of basic digital multiplexer.
18. With the help of block diagram explain XY recorder.
19. Write a note on Digital phase meter
20. Explain analog multiplexer.
21. Explain the working of LCD.
22. Explain the operation of digital Tachometer.
23. Why the use of field controlled DC motors is limited in practical
24. Write a note on digital multimeter.
25. Write a note on Universal counter.
26. Write a note on Capacitor Transducer.
27. Write a note on Digital Frequency Meter.
28. Write a note on LM 35.
29. Draw the frequency response of LP, HP band pass and band reject.
30. Write a note on strip chart recorder with block diagram.
31. Explain OLED display.
32. Explain bride type recorder.
33. Explain Whetstones Bridge.
34. Explain Photovoltaic Cell.