Total No. of Questions: 25

Enrollment No : _____

MEDICAPS UNIVERSITY

Faculty of Engineering

End Semester Examination May 2025

OE00042 Data Acquisition Systems

Programme	:	B.Tech.	**Branch/Specialisation**	:	All
Duration	:	3 hours	**Maximum Marks**	:	60

Note: *All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.*

Section 1 (Answer all question(s))

Marks CO BL

Q1. What type of interface does a DAQ (Data acquisition) hardware creates? **1 1 1**

- ○ Interface between two similar signals
- ◉ Interface between a computer and signal
- ○ Interface between two dissimilar signals
- ○ Interface between two similar hardware

Q2. Which is a false statement regarding DAQ (Data acquisition) systems? **1 1 1**

- ○ It can measure physical phenomenon which can be sampled
- ○ Signal conditioning can be done
- ◉ DAQ system can generate its own physical sample sets
- ○ Analog to digital conversion can be done

Q3. Which of the following is an indication by settling time? **1 1 1**

- ○ Accuracy of conversion
- ◉ Speed of conversion
- ○ Precision in conversion
- ○ All of the mentioned

Q4. Which of the following method is employed for ADC? **1 2 1**

- ○ Ladder network
- ◉ Successive approximation type
- ○ PWM type
- ○ None of the mentioned

Q5. Which of the following is a digital transducer? **1 1 1**

- ○ Thermocouple
- ◉ Rotary Encoder
- ○ Strain Gauge
- ○ LVDT

Q6. Which of the following represent active transducer? **1 1 1**

- ○ Strain gauge
- ○ Thermistor
- ○ LVDT
- ◉ Thermocouple

Q7. What instrument is used to amplify output signal of transducer? **1 1 1**

- ○ Peaking amplifier
- ◉ Instrumentation amplifier
- ○ Differential amplifier
- ○ Bridge amplifier

Q8. How will be the output voltage obtained for an ideal op-amp? **1 2 1**

- ◉ Amplifies the difference between the two input voltages
- ○ Amplifies individual voltages input voltages
- ○ Amplifies products of two input voltage
- ○ None of the mentioned

Q9. The serial communication is used for- **1 3 1**

- ○ Short distance communication
- ◉ Long distance communication
- ○ Short and long distance communication
- ○ Communication for a certain range of distance

Q10. Bluetooth is the wireless technology for- **1 3 1**

- ○ Local area network
- ◉ Personal area network
- ○ Metropolitan area network
- ○ Wide area network

Section 2 (Answer all question(s))

Marks CO BL

Q11. What is main objective of data acquisition system? **2 1 1**

Rubric	Marks
main objective	2

Q12. Write applications of data acquisition system. **3 1 1**

Rubric	Marks
at least three application	3

Q13. (a) Explain the overall framework of a data acquisition and processing system. **5 1 2**

Rubric	Marks
data acquisition, (2.5) processing system. (2.5)	5

(OR)

(b) Explain single-channel and multi-channel data acquisition systems (DAS).

Rubric	Marks
Single-Channel (2.5) Multi-Channel (2.5)	5

Section 3 (Answer any 2 question(s))

Marks CO BL

Q14. Describe the process of converting an analog signal into a digital format using an ADC with a proper diagram. **5 2 2**

Rubric	Marks
Describe the process (2) example (3)	5

Q15. Describe any one technique of converting an digital signal into analog signal. **5 2 1**

Rubric	Marks
complete description	5

Q16. Explain various characteristics of DAC (digital to analog converter). **5 2 1**

Rubric	Marks
At least Five characteristic	5

Section 4 (Answer any 2 question(s))

Marks CO BL

Q17. What is main function of transducer? Give it's classification. **5 3 1**

Rubric	Marks
main function 2 Classify transducer 3	5

Q18. Draw and explain the circuit of sample and hold circuit. **5 4 1**

Rubric	Marks
Draw 2 Explain 3	5

Q19. Give the detail description of analog and digital data acquisition systems. **5 2 1**

Rubric	Marks
analog data acquisition 2.5 digital data acquisition 2.5	5

Section 5 (Answer any 2 question(s))

Marks CO BL

Q20. What is a bridge circuit used for a strain gauge? Explain in detail. **5 3 2**

Rubric	Marks
Full explanation	5

Q21. Explain the operation and applications of a zero-crossing detector circuit. **5 4 1**

Rubric	Marks
operation 2.5 applications 2.5	5

Q22. What is an instrumentation amplifier? Explain the working of an instrumentation amplifier. **5 4 1**

Rubric	Marks
What is an Instrumentation Amplifier? 1 working 4	5

Section 6 (Answer any 2 question(s))

Marks CO BL

Q23. What is RS-232 serial communication standards? Explain in detail. **5 3 1**

Rubric	Marks
detail description	5

Q24. Discuss LAN standards with their features. **5 5 1**

Rubric	Marks
LAN standards with their features.	5

Q25. What are the features and applications of Zigbee protocol? **5 5 1**

Rubric	Marks
features 2.5 applications 2.5	5

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