Question	1	2	3	4	5	6	7	8	9	10	Total
Grade											
MUDEK	8	8	8	8	8	8	8	8	8	8	

YILDIZ TECHNICAL UNIVERSITY

FACULTY OF EEE / DEPARTMENT OF BIOMEDICAL ENGINEERING 2022/2023 SPRING

Name-Surname:	Student ID:			Signature:	
Course Name: **Biomedical Instrumentation**	Date/Time: **08.06.2023/09:00**			Duration: **35 min.**	
Group :**1**	Midterm 1	Midterm 2	**Final**	Quiz	Excuse
Lecturer's Title, Full Name: Assoc. Prof. Dr. Sakip ÖNDER					

ATTENTION!!!

- **All answers must be found only on the front page of a single paper. write the question number onto your answer sheet and answer the question.**
- **The expected answers are very short and clear. Sometimes 1-3 words, sometimes 1-3 sentences. If an explanation is asked, the answer is no longer than 2-3 sentences. Therefore, do not write unnecessary explanations (details).**
- **At the end of the exam, write your name&surname, sign, and upload your answer key to the system as a single copy on time.**

QUESTIONS

1. **(10p)** How would you control the arm movement of a patient who has a spinal cord injury by using EEG signals? Explain.
2. **(10p)** How would you make the output signal of an amplifier circuit constant or unaffected for small changes in the input terminal?
3. **(10p)** Assume that you are planning to buy a bio potential amplifier for your company. If you want to limit the interference due to the common mode signal, which property of the device you would interested in?
4. **(10p)** Why the electrical signal suddenly changes due to the movement of electrodes during ECG?
5. **(10p)** If you were asked to determine heart sounds using a sensor system, which one would you use? Why?
6. **(10p)**Why does sphygmomanometer cuff pressure set to high pressure at the beginning of the blood pressure measurement?
7. **(10p)** How can we understand that blood flow direction by using transit-time flowmeter?
8. **(10p)** A doctor wants to determine the visceral pleural pressure of a patient non-invasively. How can it be determined?
9. **(10p)** If you were asked to determine the composition of a gas mixture (like air) by using emission spectroscopy, which property would you expect the gases found in the mixture to have?
10. **(10p)** Is it possible not to change the film density after decreasing the x-ray amount applied to the film detector? Give YES/No answer with a brief explanation.