


GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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 Name of Examination : **Winter 2020** - (Preview)

 Course Code & Course Name : **ET403D - (Elective I)-Bio-medical Engineering**

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 Maximum Marks : **60**

 Duration : **3 Hrs**
[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

1) Solve any three sub-questions

- a) Explain the cardiovascular system [6]
- b) Write a short note on displacement, position, and motion transducers [6]
- c) What are smart sensors? give its applications. [6]
- d) Describe the sources of biomedical signals. [6]

2) Solve any three sub-questions

- a) What are biosensors? [6]
- b) Explain block diagram of Electrocardiograph [6]
- c) Write a short note on vectorcardiograph [6]
- d) What is the importance of blood flow? Discuss the biomedical instruments used to measure blood flow. [6]

3) Solve any two sub-questions

- a) Explain ultrasonic imaging [6]
- b) How can electrocardiography be used for stress testing? [6]
- c) Explain the main parts of ECG. How can you determine the heart rate? [6]

4) Solve all sub-questions

- a) What are the properties of ultrasound? How can ultrasound be used for diagnosis? [6]
- b) Explain three channel ECG recorder [6]

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