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Question Paper Code: 99B17

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Elective

Biomedical Engineering

19UBM917- REHABILITATION ENGINEERING AND ROBOTICS

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1. Define myoelectric arm. CO1- U
2. Write a short notes on rehabilitation of the visual system. CO1- U
3. Define postural support device. CO1- U
4. Write short notes on truncal and cervical orthoses. CO1- U
5. Mention the advantages and disadvantages of manual wheelchairs. CO1- U
6. Define the principles of coordination exercises. CO1- U
7. "The automation system needs sensors" – justify. CO3- Ana
8. Is there any way to implement robotics in medicine? Explain your answer. CO3- Ana
9. Is there a need of controller in rehabilitation? Justify. CO3- Ana
10. How is robot different from human? CO2- App

PART – B (5 x 16= 80Marks)

11. (a) Define is rehabilitation engineering? Elaborate in detail about the engineering concepts in sensory and motor rehabilitation. CO1- U (16)
Or
(b) Enlighten in detail about the conceptual frameworks. CO1- U (16)
12. (a) Design an intelligent prosthetic knee with necessary explanation. CO2- App (16)
Or
(b) Summarize on the construction and working of an ankle foot orthoses. CO2- App (16)

13. (a) Describe the design process of a wheel chair. Compare between a manual and a powered wheelchair. CO3-Ana (16)
- Or
- (b) Design a powered wheel chair system and discuss about the components used. CO3-Ana (16)
14. (a) Outline the concepts and principles of robotics. CO1- U (16)
- Or
- (b) Explain the overview of robot subsystems. CO1- U (16)
15. (a) Write in detail about the fundamentals of robot technology. CO1- U (16)
- Or
- (b) Describe in detail about the functions of rehabilitation robotics. CO1- U (16)