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Question Paper Code: U9475

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

Open Elective

Electronics and Communication Engineering

21UEC975-WEARABLE DEVICES

(Regulations 2021)

(Common to All branches)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1. Mention the primary purpose of wearable devices? CO1-U
2. List out the applications of wearable devices. CO1-U
3. Give various methods of measuring respiratory rate. CO1-U
4. Recall radiant thermal sensors. CO1-U
5. List out the challenges of wireless communication in Wireless Device. CO1-U
6. What are the advantages of wireless technology? CO1-U
7. Write the limitations of solar cell. CO1-U
8. Infer about vibration based power generation. CO1-U
9. Interpret the use of blood glucose monitoring. CO1-U
10. Write the importance about neural recording. CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) Describe the needs of textile and clothing upgrade into “The Meta Wearable” and provide attributes of the textile meta-wearable. CO1-U (16)
Or
(b) Explain what are the functions involved in wearable motherboard architecture. CO1-U (16)
12. (a) How can IP be used in wearable devices to monitor cardiac and blood volume in athletes, enabling optimized performance tracking. CO2-App (16)

Or

- (b) Design a system using respiration activity sensors to detect chest or abdominal expansion / contraction with the output waveform. CO2-App (16)
13. (a) Assess different technique and their research issues, Methodology and outcome of wireless system and give suitable WS in health monitoring Applications. CO4-Ana (16)
- Or
- (b) Analyse the performance of various BAN systems provide suitable system for Non-medical Applications. CO4-Ana (16)
14. (a) Explain the importance of solar cell, vibration based power requirements used in wearable devices. CO1-U (16)
- Or
- (b) How would you design a device that harvest energy from human body heat? Identify the key component and explain their roles. CO1-U (16)
15. (a) Compare Tears based HWDs and Sweat based HWDs. CO1-U (16)
- Or
- (b) Design a wearable drug delivery system. Identify its needs and explain. CO1-U (16)