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Reg. No. : .....

Name : .....

**Fourth Semester M.Sc. Degree Examination, July 2024**

**Physics**

**SPECIAL PAPER II**

**PH 243 E : ADVANCED ELECTRONICS-II**

**(2020 Admission Onwards)**

Time : 3 Hours

Max. Marks : 75

**PART – A**

Answer **five** questions. Each question carries **3** marks.

1. Explain the memory organisation of the 8086.
2. Differentiate between the minimum and maximum mode configurations of the 8086.
3. Briefly explain the role of processor chips designed for embedded applications in enhancing system performance.
4. Explain the basics of predicate and propositional logic in the context of AI.
5. What is Fuzzy logic, and how is it different from classical (Boolean) logic?
6. What are the basic concepts of artificial neural networks and how do they differ from traditional computing systems?
7. Describe LORAN and DECCA systems.
8. What are geosynchronous satellites?

**(5 × 3 = 15 Marks)**

P.T.O.



PART – B

Answer **three** questions. Each question carries **15** marks.

9. Discuss the architecture and organisation of the 8086 microprocessor in detail.

OR

10. Discuss the concept and applications of direct memory access (DMA) in computer systems. Explain the role and functionalities of the 8257 DMA controller.
11. What are embedded systems? Describe the essential components, including the microcontroller, memory and I/O devices.

OR

12. Explain the basic neural network system. Describe different types of neural network structures and their advantages and disadvantages.
13. Briefly describe satellite classification. Discuss the spacing and frequency allocations in satellite communication systems.

OR

14. Describe the different types of barcodes used in data communication. Explain their structure, encoding methods and applications in various industries.

(3 × 15 = 45 Marks)

PART – C

Answer any **three** questions. Each question carries **5** marks.

15. Write a simple 8086 assembly program to find the one's complement of a 16-bit number.
16. Write a programme to convert BCD to ASCII.
17. Briefly explain the significance of LISP and PROLOG in AI programming.



18. Differentiate between ADALINE and MADALINE networks.
19. Explain the Radar equation and its significance in radar systems.
20. For a total transmit power ( $P_t$ ) of 2500 W and a transmission rate of 30 Mbps, calculate the energy per bit ( $E_b$ ).

**(3 × 5 = 15 Marks)**

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