

(i) Washing machine

(ii) Smart watch

(iii) Microwave oven

(6+6)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 5895

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Unique Paper Code : 2224002007

Name of the Paper : Introduction to Embedded
Systems Design

Name of the Course : **B.Sc. Prog._NEP_UGCF_GE**

Semester : IV

Duration : 2 Hours

Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all.
3. **Q1** is compulsory.
4. **All** questions carry equal marks.

1. **All** questions are compulsory and carry equal marks.

(5×2=10)

- (a) Define an embedded system.
 - (b) What are the pros and cons of using COTS components in embedded system design?
 - (c) Discuss at least two practical applications of Arduino UNO.
 - (d) Describe the design and functionality of digital cameras and laser printers.
 - (e) Compare and contrast Reduced Instruction Set Computing (RISC) and Complex Instruction Set Computing (CISC) architectures.
 - (f) Compare and contrast GPRS, 3G, 4G, and LTE mobile communication technologies.
2. (a) What are ASICs and PLDs. Discuss about their roles in embedded systems.
- (b) Compare their advantages and disadvantages in terms of performance, cost, and application suitability. (6+6)

3. (a) What is a light emitting diode (LED). Compare a standard LED with 7-segment LED in terms and functionality?
- (b) Explain with an example of how a 7-segment display is used in electronic devices. (6+6)
4. (a) Discuss the evolution of Universal Serial Bus (USB) technology from its inception to its current state.
- (b) How has USB influenced peripheral device connectivity? (6+6)
5. (a) Explain how Non Operational Attributes help in improving the designing of embedded systems.
- (b) What are the four basic building blocks in Arduino programming, explain. (6+6)
6. Describe the fundamental design and working of any **two** devices from the following :