Progressive Education Society's
Modern College of Arts, Science & Commerce Ganeshkhind, Pune – 16
End Semester Examination: April 2024
Faculty: Science and Technology

Program: BScComp05 **Semester: IV** **SET: B**
Program (Specific):B.Sc.(Computer Science) **Course Type: CC**
Class: S.Y.B.Sc. Computer Sc. **Max. Marks: 35**
Name of the Course: Embedded System Design
Course Code: 23-ELC-241 **Time: 2Hr**
Paper: I

Instructions to the candidate:

1) *There are 4 sections in the question paper. Write each section on separate page.*
2) *All Sections are compulsory.*
3) *Figures to the right indicate full marks.*
4) *Draw a well labelled diagram wherever necessary.*

SECTION: A

Q1) Multiple Choice Question Or Define or Explain (5M)

1. **ARM SOC has _____ processor cores on chip.**
   a. single b. eight c. Four d. dual

2. **_____is a popular operating System for Raspberry Pi SBC.**
   a. Windows NT b. Raspbian c. CUDA d. COSMC

3. **SOC processor cores typically use _____ instruction set architectures.**
   a. CISC B. RISC C. Hybrid d. Van Neumann

4. **An 'if' statement is _____type program flow control statement.**
   a. conditional b. transfer c. iterative d. sequential

5. **Define Single board Computer (SBC).**

Q2) Very short answer questions. (Attempt any 4/6) (4M)

1. **State weather the statement is True/False: Raspbian operating system uses windows platform.**
2. **State weather the statement is True/False: SD card is the only way to load system software for Raspberry Pi**
3. **What is the role of DMA controller?**
4. **Write a syntax for assigning single values to the multiple variables.**
5. **What is NOOBS ?**
6. **Mention the use of GPIO.cleanup() module**

SECTION: B

Q3) Short answer questions (Attempt any 4/6) (8M)

1. **Mention any four characteristics of an Embedded system.**
2. **List any four types of operators in Python.**
3. **Draw a diagram of 8 stage pipeline in ARM processor.**
4. **Write a syntax for taking user input in Python.**
5. **Explain different types of program flow structures.**
6. **State the applications of PIR sensor.**

SECTION: C

Q4) Short answer questions (Attempt any 4/6) (8M)

1. **Draw a simple block diagram to interface a PIR sensor with raspberry Pi.**
2. **Write any four specifications of Beagle Bone board.**
3. **Identify the following Data types**

   1) a=150 2) salary=12800.60 3) name= "Shivaji" 4)X=2-0.5j

4. **Find the result of following program segment**

```
list= [ 3, 'hello',  199, 'WORLD' , 4]
Print (list);
Print (list[2:]);
```

5. **Draw diagram to interface Bluetooth to Raspberry Pi board.**
6. **Write any four points to differentiate between Microcontroller and Single Board Computer(SBC).**

SECTION: D

Q5) Long answer type Questions (Attempt any two of the following (2/4)) (10M)

1. **Draw and explain the Architecture of ARM processor.**
2. **Draw the block diagram of SOC and explain in detail.**
3. **Write note on Functions in Python .**
4. **Explain a GPIO connector with neat diagram.**

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