A.V.C COLLEGE OF ENGINEERING, MANNAMPANDAL, MAYILADUTHURAI

Department of Electronics and Communication Engineering
(Accredited by NBA)

"LEMON NEWSLETTER"

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Message from Head of the Department

I express my wishes to the students who have participated in the paper presentations and workshops.

I look forward from the faculties our department to engage themselves in publishing papers in scopus indexed and SCI journals and also to generate more funds for the department.

I expect from students to study confidently and score high marks in university exams.

Dr. CHITRAVALAVAN

HOD/ECE

Mindfullness

- "If it's out of your hands, it deserves freedom from your mind too."
- "The way you speak to yourself matters."
- "Visualize your highest self and start showing up as him/her."
- "To fall in love with yourself is the first secret to happiness."
- "The first and best victory is to conquer self."
- "The body benefits from movement, and the mind benefits from stillness."
- "Educating the mind without educating the heart is no education at all."

Faculty Corner:

SOPHIA- HUMANOID ROBOT

- *Mrs.R.Ramya, AP/ECE*

Sophia is a social humanoid robot developed by the Hong Kong-based company Hanson Robotics.

Sophia was activated on February 14, 2016, and made her first public appearance in mid-March 2016 at South by Southwest (SXSW) in Austin, Texas, United States.

Sophia has been covered by media around the globe, and has participated in many high-profile interviews.

Sophia was given Saudi Arabian citizenship, and became the first robot to receive citizenship of any country. Sophia was named the United Nations Development Programme's first Innovation Champion, and is the first non-human to be given a United Nations title.

Sophia was modeled after the ancient Egyptian Queen Nefertiti, Audrey Hepburn, and its inventor's wife, Amanda Hanson, is known for its human-like appearance and behavior compared to previous robotic variants.

Sophia's architecture includes scripting software, a chat system, and OpenCog, an AI system designed for general reasoning. Sophia imitates human gestures and facial expressions and is able to answer certain questions and to make simple conversations on predefined topics (e.g. on the weather).

Sophia uses speech recognition technology from Alphabet Inc. (the parent company of Google) and is "designed to get smarter over time". Its speech synthesis ability is provided by CereProc's text-to-speech engine, and also allows it to sing. Sophia's intelligence software is designed by Hanson Robotics. The AI program analyses conversations and extracts data that allows it to improve responses in the future.

Sophia is designed to be a suitable companion for the elderly at nursing homes, or to help crowds at large events or parks. He has said that he hopes that the robot can ultimately interact with other humans sufficiently to gain social skills. Sophia is marketed as a "social robot" that can mimic social behavior and induce feelings of love in humans.

Sophia has at least nine robot humanoid "siblings" who were also created by Hanson Robotics.

"Little Sophia" is a companion that could teach children how to code, including support for Python, Blockly, and Raspberry Pi.

Sophia has been interviewed in the same manner as a human, striking up conversations with hosts. Some replies have been nonsensical, while others have impressed interviewers such as *60 Minutes*'s Charlie Rose In a piece for CNBC, when the interviewer expressed concerns about robot behavior, Sophia joked that she had "been reading too much Elon Musk. And watching too many Hollywood movies".

Sophia was introduced to the United Nations with a brief conversation with the United Nations Deputy Secretary-

General. The robot was "granted Saudi Arabian citizenship", becoming the first robot ever to have a nationality, described as a publicity stunt. This attracted controversy as some commentators wondered if this implied that Sophia could vote or marry, or whether a deliberate system shutdown could be considered murder. Social media users used Sophia's citizenship to criticize Saudi Arabia's human rights record. In December 2017, Sophia's creator David Hanson said in an interview that Sophia would use its citizenship to advocate for women's rights in its new country of citizenship.

Student Corner:

RASPBERRY PI

-   ***GOBIKA S, IV ECE***

Raspberry Pi, developed by Raspberry Pi Foundation in association with Broadcom, is a series of small single-board computers and perhaps the most inspiring computer available today.

From the moment we see the shiny green circuit board of Raspberry Pi, it invites you to tinker with it, play with it, start programming, and create your own software with it. Earlier, the Raspberry Pi was used to teach basic computer science in schools but later, because of its low cost and open design, the model became far more popular than anticipated.

It is widely used to make gaming devices, fitness gadgets, weather stations, and much more. But apart from that, it is used by thousands of people of all ages who want to take their first step in computer science.

It is one of the best-selling British computers and most of the boards are made in the Sony factory in Pencoed, Wales.

Generations and Models

In 2012, the company launched the Raspberry Pi and the current generations of regular Raspberry Pi boards are Zero, 1, 2, 3, and 4.

Generation 1 Raspberry Pi had the following four options −

Model A

Model A +

Model B

Model B +

Among these models, the Raspberry Pi B models are the original credit-card sized format.

On the other hand, the Raspberry Pi A models have a smaller and more compact footprint and hence, these models have the reduced connectivity options.

Raspberry Pi Zero models, which come with or without GPIO (general-purpose input output) headers installed, are the most compact of all the Raspberry Pi boards types.

Raspberry Pi Version	Release Date
Raspberry Pi 4 Model B	2019-2020
Raspberry Pi 3 Model B+	2018
Raspberry Pi 3 Model B	2016
Raspberry Pi 3 Model A+	2018
Raspberry Pi Zero Wireless with Headers	2017
Raspberry Pi Zero Wireless	2016
Raspberry Pi Zero	2015
Raspberry Pi 2 Model B	2015

Raspberry Pi 1 Model B +	2014
Raspberry Pi 1 Model B	2012
Raspberry Pi 1 Model A+	2014
Raspberry Pi 1 Model A	2013

External hard drive

If you want to share your collection of music and movies, you need to use an external hard drive with your Raspberry Pi model. You can connect the same by using a powered USB cable.

Raspberry Pi Camera Module

The Raspberry Pi camera module originated at Raspberry Pi foundation. It is an 8MP (megapixel) fixed focus camera that can be used to shoot high-definition video and take still photos. For wildlife photography at night, it provides another version without an infrared filter.

Speakers

The Raspberry Pi has a standard audio out socket. This socket is compatible with headphones and speakers that use a 3.5mm audio jack. We can plug headphones directly to it.

Power supply

For power supply, it uses a Micro USB connector. Hence theoretically, it is compatible with a mobile phone and tablet charger.

Cables

Following are some of the cables, which you need for the connections to the Raspberry Pi computer −

- HDMI cable
- HDMI-to-DVI adapter, if you are using a Digital Visual Interface (DVI) monitor.
- RCA cable, if you want to connect to an older television.
- Audio cable
- Ethernet cable

Software developer Eben Upton and Software Engineers Pete Lomas and David Braden formed the Raspberry Pi foundation in 2006. The main aim of this foundation was to devise a computer to inspire children. Hence, in order to reduce the cost, the early prototypes of the Raspberry Pi were based on the 8-bit Atmel ATmega microcontroller.

The name Raspberry Pi was chosen with "Raspberry" as an ode to tradition of naming early computer companies after fruit. Here, "Pi" is for Python Programming Language.

Uses

Like a desktop computer, you can do almost anything with the Raspberry Pi. You can start and manage programs with its graphical windows desktop. It also has the shell for accepting text commands.

We can use the Raspberry Pi computer for the following −

- Playing games
- Browsing the internet
- Word processing
- Spreadsheets
- Editing photos
- Paying bills online
- Managing your accounts.

The best use of Raspberry Pi is to learn how a computer works. You can also learn how to make electronic projects or programs with it.

It comes with two programming languages, Scratch and Python. Through GPIO (general-purpose input output) pins, Raspberry Pi can be connected to other circuits, so that you can control the other devices of your choice.

Monitor

The Raspberry Pi uses a high-definition multimedia interface (HDMI) connection for video feed, and you can connect your monitor directly with this interface connection, if your monitor has an HDMI socket.

Television

In the similar way, a High Definition Television (HD TV), can be connected to the Raspberry Pi using an HDMI socket. It will give a crisper picture.

USB hub

Depending on the model, Raspberry Pi has 1, 2, or 4 Universal Serial Bus (USB) sockets. Powered USB should be considered to connect other devices to your Raspberry Pi at the same time.

Keyboard and Mouse

Raspberry Pi only supports the USB keyboards and mouse. Keyboards and mouse with PS/2 connectors, is to be replaced with Raspberry Pi.

SD or MicroSD card

The Raspberry Pi does not have a hard drive, so it is needed to use SD cards or MicroSD cards (depending on the model) for storage.

USB Wi-Fi adapter

If model A and A+ are used then, it is needed to buy a USB Wi-Fi adapter for connecting to the internet. This should be done because these Raspberry models do not have an Ethernet socket.

External hard drive

To share our collection of music and movies, it is needed to use an external hard drive with the Raspberry Pi model. The same can be connected by using a powered USB cable.

Quiz –Basics of Digital Electronics

- *Sangeetha M, IV ECE*
-

1. The Boolean Function F(A,B,C)=$\sum$ (3,4,6,7) is equivalent to
   A. AB+BC'+AC
   B. A'B+BC+AC
   C. AB+BC+AC'
   D. AB+BC'+AC'

2. The Boolean Function Y=AB+CD is to be realized using only 2-input NAND gate. The minimum number of gates required are:
   A. 2
   B. 3
   C. 4
   D. 5

3. The delay times are measured between the_____% voltage level of input and output waveforms.
   A. 50
   B. B. 75
   C. 25
   D. 100

4. In half adder, the total number of inputs and outputs are:
   A. 1,2
   B. 2,1
   C. 3,2
   D. 2,2

5. The input to the logic gates is A=1100 B=1010. What will be output if the logic gate is NAND gate?
   A. 1101
   B. 0111
   C. 0110
   D. 1011

6. How many minimum multiplexer is required to implement the function f(a,b,c) =
   $\sum$ m(0,1,2,5). Apart from MUX only inverter is allowed
   A. 2:1 MUX
   B. 4:1 MUX
   C. 6:1 MUX
   D. 7:1 MUX

7. 5:32 Decoder circuit can be implemented with _____
   A. One 2:4 decoder and four 3:8 decoder
   B. Four 3:8 decoder
   C. Two 3:8 decoder
   D. Eight 2:4 decoder

8. The excess-3 code of decimal 7 is represented by
   A. 1001
   B. 1100
   C. 1011
   D. 1010

9. Which group of instruction does not affect the flag?
   A. Arithmetic operation
   B. Logical operation
   C. Data transfer operation
   D. No of the above

10.

Identify the logic gate carried out by the following circuit?
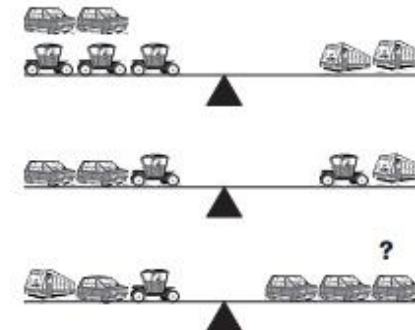

Y'   Y
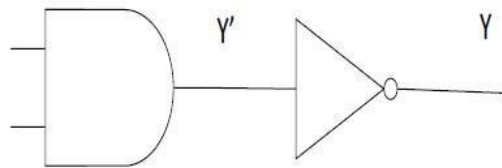
A) OR
B) AND
C) NOR
D) NAND

Answers:

1) C.)AB+BC+AC'

2) B.) 3

3) A.)50

4) D.)2,2

5) B.)0111

6) B.)4:1 MUX

7) A.)One 2:4 decoder and four 3:8 decoder

8) A.)1010

9) C.)Data transfer operation

10) D.)NAND
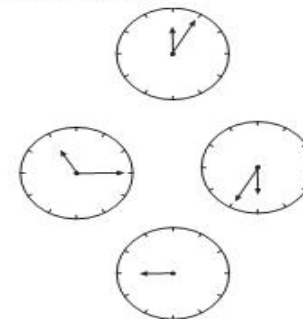
PUZZLES

- U.Bragathishwari, IV ECE

Which object is needed to make scales balance?

Answer : Carriage
Explanation : The Carriage = 2, the Car = 3 and the Bus = 6

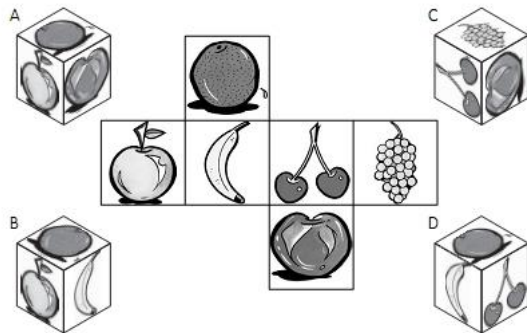Where should the minute hand be put on the bottom clock?
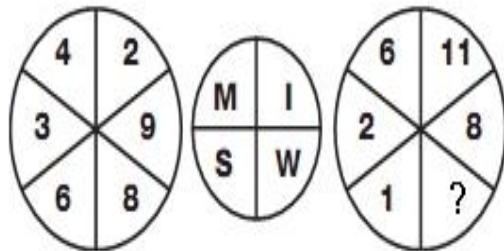
Answer : Hand pointing to 5

Explanation :

Starting with the top clock and moving anti-clockwise around the others, the hour hand moves back 1 hour, then 2, then 3 etc, while the minute hand moves forward 10 minutes each time.

Which picture cube does this shape make?

Answer : C

Which number replaces the question mark?

Answer : 4

Explanation :

Split the left and right hand circles into 2 halves vertically. The numerical value of the letter in the upper left segment of the central circle equals the sum of the numbers in the left half of the left hand circle, and the letter in the lower left equals the sum of the numbers in the right half of the left hand circle. Repeat this pattern for the right hand circle.

Which letter replaces the question mark?

Answer : U

Explanation :

Multiply the numerical values of the letters in each pair to give the 3 digit result in the spaces above.

**Editor's Desk:**

**Top 10 benefits of practising Yoga:**

- ➢ _Yoga increases your flexibility._
- ➢ _Yoga helps you to build strength._
- ➢ _Yoga improves your posture._
- ➢ _Yoga helps to keep your joints healthy._
- ➢ _Yoga is a powerful mindfulness practice._
- ➢ _Yoga reduces stress._
- ➢ _Yoga lowers blood pressure._
- ➢ _Yoga helps you to make healthier life choices._
- ➢ _Yoga improves breathing._
- ➢ _Yoga encourages your body's natural healing process._

**Send your suggestions to:**

Dr.K.R.Vinothini, AP/ECE –Editor / _LEMON NEWSLETTER_
lemonece2013@gmail.com

**Student Editors :**

1. U.Bragathishwari, IV ECE
2. Maheshkumar.B, IV ECE
3. M.Yogeshwaran, III ECE
4. S.Ashika, III ECE

Department Vision

To create globally competent engineers in Electronics and Communication Engineering to meet the industrial progress for betterment of the society

Department Mission

- ➢ To create an academic ambience for quality education in the field of Electronics and Communication Engineering

- ➢ To make the best use of modern tools and software for teaching and research activities

- ➢ To promote industry-institution interaction for skill-based learning of students from rural society

- ➢ To inculcate moral and ethical values with a sense of professionalism.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO's):

1. To provide the students with a strong foundation in the required sciences in order to pursue studies in Electronics and Communication Engineering.

2. To gain adequate knowledge to become good professional in electronic and communication engineering associated industries, higher education and research.

3. To develop attitude in lifelong learning, applying and adapting new ideas and technologies as their field evolve

4. To prepare students to critically analyze existing literature in an area of specialization and ethically develop innovative and research oriented methodologies to solve the problems identified.

5. To inculcate in the students a professional and ethical

attitude and an ability to visualize the engineering issues in a broader social context.

PROGRAMME OUTCOMES:

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- ➢ PSO1: Design, develop and analyze electronic systems through application of relevant electronics, mathematics and engineering principles
- ➢ PSO2: Design, develop and analyze communication systems through application of fundamentals from communication principles, signal processing, and RF System Design & Electromagnetics.
- ➢ PSO3: Adapt to emerging electronics and communication technologies and develop innovative solutions for existing and newer problems