SRI JAYACHAMARAJENDRA COLLEGE OF ENGINEERING

JSS SCIENCE AND TECHNOLOGY UNIVERSITY

Constituent College of JSS Science and Technology University
Approved by A.I.C.T.E
Governed by the Grant-in-Aid Rules of Government of Karnataka
Identified as lead Institution for World Bank Assistance under TEQIP Scheme

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VII Semester, 'A' & 'B' Sections

EMBEDDED SYSTEMS – EC745

TEST – 3

Duration: 1 Hr. Date: 11 – 01 – 2022 Max. Marks: 20

Name of The Paper Setter: Puneeth K M Time: 02.00 to 03.00PM

Course outcome covered in this event:

CO3: Apply contemporary techniques for Hardware-Software co-design of embedded systems for Real time applications using RTOS.

Cognitive domain:

L1: Remember **L2: Understand** **L3: Apply** **L4: Analyze** **L5: Evaluate** **L6: Create**

Instructions:

1. Questions 1 and 2 are compulsory.
2. Answer the remaining questions making use of internal choice.

Q. No.	CO	Cognitive Domain	Question	Marks
1.	3	L – 3	Design a coin operated telephone unit based on FSM model for the following requirements, i. The calling process is initiated by lifting the receiver of the telephone unit. ii. After lifting the phone, the user needs to insert 1-rupee coin to make the call. iii. If the line is busy, the coin is returned on placing the receiver back on the hook. iv. If the line is through, the user is allowed to talk till 60 seconds and the end of 45th second, prompt for inserting another 1-rupee coin for continuing the call is initiated. v. If the user doesn't insert 1-rupee coin, the call is terminated on completing the 60 seconds time slot. vi. The system is ready to accept new calls request when the receiver is placed back on the hook. vii. The system goes to the 'out of order' state when there is a line fault.	05
2.	3	L – 2	What is kernel in operating system? What are the different types of services handled by kernel? Explain each of the services. Also, mention the differences between user space and kernel space.	05
3.	3	L – 2	What do mean by hardware software co design process? Deduce the fundamental issues with respect to hardware software co design process.	05
			OR	
4.	3	L – 2	Interpret the difference between 'super loop' based and 'OS' based embedded firmware design. Which one is better approach?	05
5.	3	L – 2	Enumerate the meaning of message passing in inter process/task communication. Explain the different types of message passing techniques.	05
			OR	
6.	3	L – 2	Elucidate how task communication is classified based on the degree of interaction between process/task. Also, explain the concept of shared memory and its types.	05

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VII Semester, 'A' & 'B' Sections

Entrepreneurship and Management- EC710

TEST – 3

Duration: 1 Hr. **Date: 13– 12– 2021** **Max. Marks: 20**

Name of the paper setters: A. Thyagaraja Murthy and Yashwanth S D

Course outcome covered in this event:

CO2. Analyze the importance of technology management with respect to organizational finance, ethics, team work and project planning. Investigate techno-economic feasibility of a project,

Cognitive domain:

L1: REMEMBER **L3: APPLY** **L5: EVALUATE**

L2: UNDERSTAND **L4: ANALYZE** **L6: CREATE**

Instructions:

1. *Question 4 is compulsory.*
2. *Answer any 2 from the remaining questions.*

Q. No.	CO	Cognitive Domain	Question	Marks
1.	2	2	What is engineering management? With the help of a block diagram, Explain various functions of managing Engineering and Technology ?	06
2.	2	3	Analyze briefly for a successful enterprise, effective strategies are of prime importance to achieve its vision and mission ? (write appropriate block diagram)	06
3.	2	4	Analyze the growth and implications of scientific management and list the contributions of F W Taylor ? (And add any Indianess in this context)	06
4.	2	3	For a given product and company (say for example an automobile) list a set of assumptions regarding the following matters: Economy, competition, materials, labor, customer demand – that should govern their planning over the next 5 years ?	08

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VII Semester, 'A' & 'B' Sections

POWER ELECTRONICS – EC720

TEST – 3

Date: 10 – 01 – 2022

Duration: 1 Hr. **Max. Marks: 20**

Name of The Paper Setter: Eshwari A Madappa **Time: 02.00 to 03.00PM**

Course outcome covered in this event:

CO-1: Explain the various power devices and circuits.

CO-2: Analyze different power electronics circuits.

Cognitive domain:

L1: REMEMBER **L3: APPLY** **L5: EVALUATE**

L2: UNDERSTAND **L4: ANALYZE** **L6: CREATE**

Instructions:

1. *Question 1 is compulsory.*
2. *Answer the remaining questions making use of internal choice.*

Q. No.	CO	Cognitive Domain	Question	Marks
1.	2	L – 3	A single-phase half wave converter is operated from 220V, 50Hz supply and the load resistance is R=8Ω. If the average output voltage is 35% of its maximum value, calculate: i) Delay angle α ii) RMS and average output currents iii) RMS and average thyristor currents iv) Input power factor.	10
2.	2	L – 4	For the single-phase semi-converter having resistive load determine the following: i) Average output voltage ii) RMS output voltage.	05
			OR	
3.	2	L – 4	For the single phase fully controlled bridge converter having resistive load determine the following: i) Average output voltage ii) RMS output voltage.	05
4.	1	L – 1	Explain the classification of chopper based on input and output voltage.	05
			OR	
5.	1	L – 1	Explain the classification of chopper based on directions of current and voltage flow.	05

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VII Semester, 'A' & 'B' Sections

AUTOMOTIVE ELECTRONICS – EC731

TEST – 3

Duration: 1 Hr. **Date:** 11 – 01 – 2022 **Max. Marks:** 20

Name of The Paper Setters: Puneeth K M & Yashwanth S D **Time:** 09.30 to 10.30AM

Course outcomes covered in this event:

CO4: Exemplify the different measuring principles involved in sensors and evaluate for automotive applications.

CO5: Demonstrate the knowledge of basic principle of actuators and explain the mechanism of hybrid drives.

Cognitive domain:

L1: REMEMBER **L3: APPLY** **L5: EVALUATE**
L2: UNDERSTAND **L4: ANALYZE** **L6: CREATE**

Instructions:

1. Questions1 and 2 are compulsory.
2. Answer the remaining questions making use of internal choice.

Q. No.	CO	Cognitive Domain	Question	Marks
1.	4	L – 3	An automobile will use ultrasound sensor to measure the distance between the obstacle and the vehicle approaching it. Find the distance between the car and the object using the following data, a) Transmitter and receiver are placed at the distance of 1.25m. b) Time taken from transmitter to reach the object is 420ms. c) Time taken to reach the receiver is 422ms. d) Assume the speed of sound as 343m/s.	05
2.	5	L – 4	"Split power hybrid drives are more efficient than serial or parallel hybrid drive". If 'YES' justify the statement, if 'NO' Explain why?	05
3.	4	L – 2	Explicate, how Newtons Second Law (F=M*a) can be used to determine the acceleration of the vehicle with neat illustration.	05
			OR	
4.	4	L – 2	Deduce the working of hot-film air-mass meters with the schematic diagram.	05
5.	5	L – 2	Deduce how the principle of electromagnetism is used in switching solenoid, single winding rotary actuator, and torque motor.	05
			OR	
6.	5	L – 2	What is recuperative breaking? Explain how recuperative breaking eliminates the loss of energy during breaking of an automobile vehicle with a representation.	05