

KADI SARVA VISHWAVIDYALAYA
B.E. SEMESTER 7TH EXAMINATION NOV 2016

SUBJECT CODE: EC-704B

SUBJECT NAME : EMBEDDED SYSTEMS

DATE: 16/11/2016

TIME: 10.30 TO 01.30 PM

TOTAL MARKS: 70

Instructions:

1. Answer Each Section in Separate Answer sheet.
2. Use of Scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of supplementary for rough work.

SECTION-1

- Q.1 (A)** Explain Real time embedded system. Explain with Examples [05]
(B) Define and classify Embedded systems with examples. [05]
(C) Write a Short note on Watchdog Timer. [05]

OR

- (C)** Explain Design Process in Embedded Systems. [05]

- Q.2 (A)** Explain 3 Stage Pipeline in ARM. [05]
(B) Explain I₂C protocol. State use of each control bit of I₂C. [05]

OR

- Q.2 (A)** List wireless and mobile system protocols and discuss any two in detail. [05]
(B) Draw and Explain Block Diagram of ATMEG16 AVR Controller. [05]

- Q-3 (A)** Explain Features of Raspberry Pi B Model in Details. [05]
(B) Explain ISA (Industry Standard Architecture) Bus. [05]

OR

- Q-3 (A)** Explain PCI and PCI/x bus for Parallel Device Protocol. [05]
(B) Write a Short note on RTC (Real Time Clock). [05]

SECTION-2

- Q.4 (A)** What is inter-process communication? Why it is required? [05]
(B) What is task? Explain different task states and Task Control Block (TCB) data. [05]
(C) Write a Short Note on SPI Bus. [05]

OR

- (C)** Explain Assembly or C language Code for Displaying Message on LCD Using Flowchart. [05]

- Q.5 (A)** Explain Services in Operating Systems. [05]
(B) Explain Memory Management in RTOS. [05]

OR

- Q.5 (A)** Explain Earliest Deadline First Scheduling algorithm with neat sketch and example. [05]
Discuss disadvantages of EDF.
(B) Write a Short Note on DSP Processor. [05]

- Q-6 (A)** What are the RTOS security issues, Which are the important security function generally found on RTOS? [05]
(B) Explain Challenges in Embedded System Design. [05]

OR

- Q-6 (A)** What is Semaphore? Explain with help of example “How semaphore can be work as resource key?” [05]
(B) Explain Function of Interrupt Service Routine (ISR) in details. [05]

-----**ALL THE BEST**-----

KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER : 7th

SUBJECT CODE : EC -704-A

DATE:16/11/2016

EXAMINATION (November / 2016)

SUBJECT NAME :Satellite Communication

TIME: 10:30 am to 01:30 pm

TOTAL MARKS: 70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

Section - 1

Q:1 Define the following:

05

- (A) Discuss in detail: The parameter that effect the selection of satellite launch vehicle.
- (B) Calculate the frame efficiency for an INTELSAT frame given the following information: Total frame length= 120832; Traffic bursts per frame=14 Reference burst per frame=2;Guard Interval=103 symbols
- (C) Write a short note on satellite antennas.

05

OR

- (C) Write short notes on Access Control Protocols used in VSAT network

05

Q:2 Answer the following Question.

- (A) Define following terms.

05

- a. Argument of Perigee
- b. Mean anomaly
- c. Ascending Node
- d. Geo synchronous orbit
- e. Apogee

- (B) Write a short note on attitude control system.

05

OR

- (A) An earth station situated in Bangalore needs to calculate the Look angles to a geostationary satellite in the Indian ocean operated at INSAT. The details of the earth station site and the satellite are as follows:

Earth station latitude and Longitude are 52.00 N and 00

Satellite longitude (sub satellite point) is 66. 00 E

- (B) Explain what is XPD? How XPD are predicted? Also Draw and Explain properly The Canting Angle and Tilt Angle with required equations.

Q:3 Answer the following Question.

- (A) How the prediction of rain attenuation is possible? Also state the calculation steps of Long Term Statistics for NGSO System

- (B) What is the earth's oblateness, sun and moon's effects on artificial satellite's orbit?

05

OR

- (A) Draw and explain the block diagram of satellite transponder in detail.

05

- (B) What do you mean by multiple access technique? Explain Time Division Multiple Access in detail.

05

Section - 2

Q:4 Answer the following Question.

- (A) Explain following terms in detail regarding GPS. 05
a. Signal levels
b. Timing Accuracy
- (B) Draw and explain the TT&C. 05
- (C) Explain how to compute uplink and downlink C/N ratios for a typical satellite link 05
- OR**
- (C) Explain calculation of link margins for a VSAT Star network with suitable equations. 05

Q:5 Answer the following Question

- (A) A geostationary satellite is located at 90 W. Calculate the Azimuth angle for an earth-station antenna at latitude 35 N and longitude 100 W 05
- (B) Explain three laws of Kepler's for planetary motion in detail. 05
- OR**
- (A) Write short notes on Demand Access Multiple Access system 05
- (B) Write short notes on GPS Receivers with using simplified block diagram 05

Q:6 Answer the following Question

- (A) List the propagation effects that are not associated with hydrometeors. Explain any two of them in details. 05
- (B) Explain different Satellite services. 05
- OR**
- (A) Write Short notes on Operational Non-Geostationary Satellite Orbit (NGSO) Constellation design. 05
- (B) List the step for design procedure for satellite communication link. 05

ALL THE BEST

KADI SARVA VISHWAVIDHYALAYA
B.E. SEMESTER 7th EXAMINATION-November 2015

SUBJECT CODE:EC-704B
DATE: 01/12/2015

SUBJECT NAME :Embedded Systems
TIME: 10:30 am to 01:30 pm TOTAL MARKS:70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate clearly, the options you attempted along with its respective question number.
5. Use the last page of supplementary for rough work.

SECTION-1

Q.1 All Compulsory

- (A) Explain design process steps in embedded system. [05]
- (B) Which are the basic features adopted from RISC (Reduced Instruction Set Computer) architecture to enhance the performance of ARM architecture, explain in short two of them. [05]
- (C) What do you mean by embedded system? Discuss the various components of embedded System design. [05]

OR

- (C) Explain CPSR and SPSR. [05]

Q.2 Answer the following Question.

- (A) Explain ARM development tools for embedded system design. [05]
- (B) Which are the various parallel communication protocols used in embedded system design? Discuss in short two of them. [05]

OR

- (A) Which is the various serial communication protocols used in embedded system design? Discuss in short two of them. [05]
- (B) Write a short note on hyper text transfer protocol. [05]

Q.3 Answer the following Question.

- (A) What is processor? Compare single and general purpose processor. [05]
- (B) Explain Thumb Programming Model. [05]

OR

- (A) Explain 802.11 network protocol in detail. [05]
- (B) Compare various wireless and mobile system protocols. [05]

SECTION-2

Q.4 All Compulsory

- (A) What do you mean by Inter Process Communication (IPC) functions? Explain in short. Which are the IPC functions generally found on Real Time OS. [05]
- (B) Explain the use of Timer and Event functions with respect to RTOS (Real Time Operating Systems) and with examples of Timer and Event functions. [05]
- (C) Comparison of Process, Thread and Task with respect to RTOS (Real Time Operating Systems) [05]

OR

- (C) What are the RTOS security issues, which are the important security function generally found on RTOS? [05]

Q.5 Answer the following Question.

- (A) What is task scheduling models of RTOS, explain only two scheduling models of RTOS in short. [05]
- (B) What are the RTOS security issues, which are the important security function generally found on RTOS? [05]

OR

- (A) Give the detail of kernel functions in an OS. What can be the function outside the kernel? [05]
- (B) Short Note : Memory management strategy of RTOs in embedded system design. [05]

Q.6 Answer the following Question.

- (A) What is an interrupt? Discuss the Interrupt handling of RTOs environment in detail. [05]
- (B) Explain the features of watch dog timer and real time clock in embedded systems. [05]

OR

- (A) List the IO types and explain any two types with example. [05]
- (B) Explain I2C Bus. [05]

All the Best

KADI SARVA VISHWAVIDYALAYA

B.E SEMESTER : 7th

EXAMINATION (November / 2015)

SUBJECT CODE : EC -704-A(EP-1)

SUBJECT NAME : Satellite Communication

DATE: 01/12/2015

TIME: 10:30 am to 01:30 pm

TOTAL MARKS: 70

Instructions:

1. Answer each section in separate Answer Sheet.
2. Use of scientific Calculator is permitted.
3. All questions are compulsory.
4. Indicate **clearly**, the options you attempted along with its respective question number.
5. Use the last page of main supplementary for rough work.

Section - 1

Q:1 Answer the following Question.

(A) Define the following:

05

1. Apogee 2. Perigee 3. Foot Print 4. Propagation Delay 5. Topology

(B) What is satellite communication? Draw & Explain the basic block diagram of satellite communication.

05

(C) Write down applications of satellite communication in brief.

05

OR

(C) Draw and Explain the block diagram of satellite transponder in detail.

05

Q:2 Answer the following Question.

(A) What is the purpose of Telemetry, Tracking, Command, and Monitoring in satellite communication? Explain in detail.

05

(B) Explain three laws of Kepler's for planetary motion in detail.

05

OR

(A) Explain what is meant by the geo-stationary orbit. Why there is only one geo-stationary orbit?

05

(B) A satellite is in an elliptical orbit with a perigee of 1000km and an apogee of 4000km. using mean earth radius of 6378.14 km. Find the period of the orbit in hours, minutes, and seconds, and the eccentricity of the orbit.

05

Q:3 Answer the following Question.

(A) Write a short note on attitude control system.

05

(B) List the advantage and disadvantage of FDMA, TDMA and CDMA multiple access techniques.

05

OR

(A) Explain Demand Access & Random Access Multiple access techniques.

05

(B) A geo-stationary satellite is located at 90 W. Calculate the azimuth angle for an earth-station antenna at latitude 35 N and longitude 100 W.

05

Section – 2

Q:4 Answer the following Question.

- (A) Explain how to compute combined uplink and downlink C/N ratio for a typical satellite link. 05
(B) Calculate overall [C/No] of a satellite circuit has the following parameters. 05

Parameter	Uplink	Downlink
[EIRP]	55	34
[G/T]	-2	12
[FSL]	200	198
[RFL]	2	1.5
[AML]	0.5	0.5
[PL]	0.7	0.7
[AA]	1	1
[K]	-228.6 dB	-228.6 dB

- (C) Explain SPADE system in detail. 05

OR

- (C) Calculate the frame efficiency for an INTELSAT frame given the following information: 05

Total frame length= 120832; Traffic bursts per frame=14Reference burst per frame=2;
Guard Interval=103 symbols.

Q:5 Answer the following Question

- (A) Write short notes on Access Control Protocols used in VSAT network. 05
(B) Explain what is XPD? How XPD are predicted? Also Draw and Explain properly The Canting Angle and Tilt Angle with required equations. 05

OR

- (A) Explain calculation of link margins for a VSAT Star network with suitable equations. 05
(B) List the propagation effects that are not associated with hydrometeors. Explain any two of them in details. 05

Q:6 Answer the following Question

- (A) What is GPS? Explain principle of GPS position location. 05
(B) How the prediction of rain attenuation is possible? Also state the calculation steps of Long Term Statistics for NGSO System. 05

OR

- (A) Write short notes on GPS Receivers with using simplified block diagram. 05
(B) Explain Elliptical orbits and Molniya orbit with their uses. 05