Est. Length: 2:00:00 Time Taken:0:10:15 KHIU KIM HONG EEE-DEEE-FT-3A-06: Attempt 4

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1 2 3 4 5 6 7 8 9 10 11

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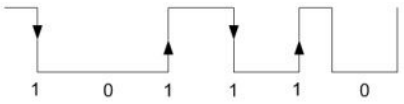
12 13 14 15 16 17 18

Question 1 (5 points) ✓ *Saved*

Which one of the following coding methods is used for the signal waveform shown in Figure with bit sequence of $(011101)_2$?



- ○ Pulse Pause coding
- ○ Modified Miller coding
- ◉ Miller coding
- ○ Manchester coding

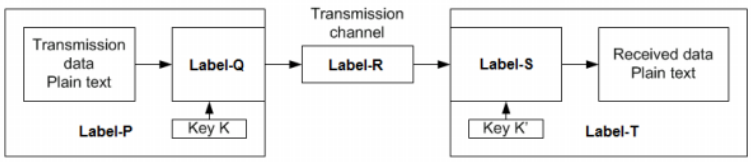
Question 2 (6 points) ✓ *Saved*

Which of the frequency ranges are generally used for RFID system?

- ☑ SHF
- ☑ HF
- ☑ LF
- ☑ UHF
- ☐ SLF
- ☐ EHF

Question 3 (7 points) ✓ *Saved*

Figure shows the encryption data transfer used in secure transfer of data in communication system. Match the following with their respective label.



4	Transmitter
3	Decryption process
5	Encryption process
1	Receiver
2	Cipher Data

1. Label-T
2. Label-R
3. Label-S
4. Label-P
5. Label-Q

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Question 4 (5 points) ✓ *Saved*

High security RFID systems are able to provide:

- ○ eavesdropping into radio communications and replaying the data.
- ● duplication and modification of data by authorised user.
- ○ unauthorised access to a building or receiving services without payment.
- ○ unauthorised access to a very importance places using any RFID tags.

Question 5 (5 points) ✓ *Saved*

What is the typical read range of an LF RFID system?

- ○ 10 m
- ● < 0.5 m
- ○ 3 m
- ○ 1 m

Question 6 (6 points) ✓ *Saved*

Which of the following are typical applications of RFID technology?

- ☑ Animal Identification
- ☑ Secure Payment
- ☐ Broadband wireless communications
- ☑ Pallet Tracking
- ☑ Electronic Toll Collection
- ☑ Door Access system

Question 7 (6 points) ✓ *Saved*

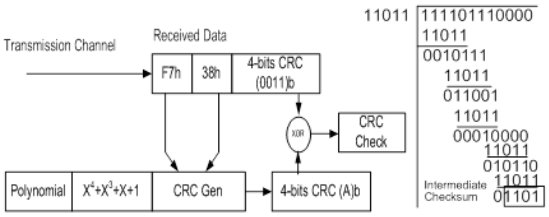
The limitations of RFID system are:

- ☐ unlimited life span of passive tags
- ☑ the penetration power of RF energy
- ☑ susceptible to the electromagnetic interference
- ☐ able to read multiple tags at the same time

Question 8 (5 points) ✓ *Saved*

Figure (A) shows the two data bytes (F7h & 38h) and the 4-bit CRC check sum "$(0011)_b$" which were received by an RFID transponder. Figure (B) shows the intermediate output checksum "$(1101)_b$" of the data byte (F7h) being divided by the given generator polynomial (X^4+X^3+X+1) as an example.

Which of the following is the final 4-bit CRC check sum output "A" at the transponser for comparison?



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Question 8 (5 points) Saved

Figure (A) shows the two data bytes (F7h & 38h) and the 4-bit CRC check sum "$(0011)_b$" which were received by an RFID transponder. Figure (B) shows the intermediate output checksum "$(1101)_b$" of the data byte (F7h) being divided by the given generator polynomial (X^4+X^3+X+1) as an example.
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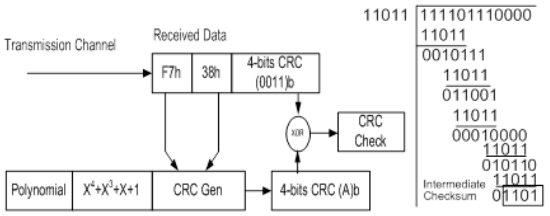

Figure A

Figure B

- 0101
- **0011**
- 1100
- 0111

Question 9 (5 points) Saved

The reason for using beacon concepts in active tags that operate at fixed interval is:

- to provide greater distance.
- to store additional information sent by the transceiver.
- **to save power.**
- to have larger memories.

Question 10 (5 points) Saved

Mutual Symmetrical Authentication is a method that involves:

- **Common secret key**
- Error detection
- Special security module
- Common derived Key

Question 11 (5 points) Saved

The encrypted data transfer involves:

- anti-collision
- power saving
- energy transfer
- **decryption**

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Question 12 (5 points) Saved

The most suitable radio frequency used for animal identification system is:

- ○ UHF
- ○ Micrwave frequency
- ○ HF
- ● LF

Question 13 (6 points) Saved

Which of the following is/are TRUE about RFID technology?

- ☑ EPC (Electronic Product Code) UHF tags can be used to track the items in warehouse.
- ☐ HF tags are more expensive than the LF tags
- ☐ Data rate of an RFID system depends upon the frequency band that used. The data rate is faster when the frequency is lower in principle.
- ☑ HF tags are relatively short read range and slower data rates when compared to UHF tags
- ☑ LF tags are used for animal tracking applications due to least susceptible to performance degradations from liquids.

Question 14 (6 points) Saved

Which one of the following is/are TRUE in Mutual Symmetrical Authentication method?

- ☑ The token can be encypted using any algorithm.
- ☑ Common secret key K is used in both reader and tag.
- ☐ The secret keys are transmitted over the airwaves.
- ☐ The two random numbers generated in the reader and tag are the same.

Question 15 (5 points) Saved

The need for an antenna in a passive RFID tag is:

- ○ to save power.
- ○ to provide fast response.
- ● to collect power from in incoming signal.
- ○ to store additional information sent by the reader.

Question 16 (7 points) Saved

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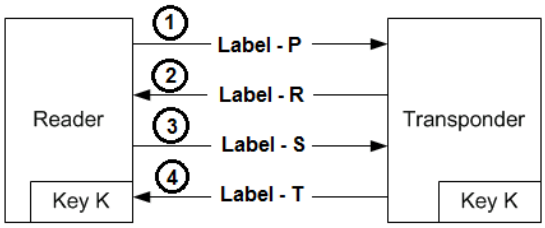
Question 15 (5 points) Saved

The need for an antenna in a passive RFID tag is:

- ( ) to save power.
- ( ) to provide fast response.
- (•) to collect power from in incoming signal.
- ( ) to store additional information sent by the reader.

Question 16 (7 points) Saved

Figure shows the Mutual Symmetrical Authentication used in RFID system. Transmission sequence is as shown in Figure like in order 1, 2,3 & 4. Match the fllowing with their respective label.



3	GET_CHALLENGE	1. Label - S
2	Random number R_A	2. Label - R
4	Token 2	3. Label - P
1	Token 1	4. Label - T

Question 17 (6 points) Saved

An active RFID tag provides:

- [ ] easier in designing
- [x] limited lifetime
- [x] the higher data capacity
- [ ] unlimited lifetime
- [x] longer read range

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Page 1:

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3	GET_CHALLENGE	1. Label - S
2	Random number R_A	2. Label - R
4	Token 2	3. Label - P
1	Token 1	4. Label - T

Question 17 (6 points) Saved

An active RFID tag provides:

- [ ] easier in designing
- [x] limited lifetime
- [x] the higher data capacity
- [ ] unlimited lifetime
- [x] longer read range

Question 18 (5 points) Saved

A passive RFID tag using the 2.4GHz frequency will be:

- ( ) larger in size and faster data rate compared to the system using lower frequency.
- (•) smaller in size and faster data rate compared to the system using lower frequency.
- ( ) smaller in size and slower data rate compared to the system using lower frequency
- ( ) larger in size and slower data rate compared to the system using lower frequency.

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