RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2016-2017)

Subject Name: Microprocessors and Interfacing **Branch: ECE**
Date: 28/04/2017 **Time: 3 Hrs.**
Exam: E3S2EST **Max Marks: 60**

B121742

Note: Answer any FIVE questions and each question carries equal marks.

1.
   A. Draw the schematic pin diagram of 8085μP and explain the pin functions of 8085μP [8 Marks]
   B. Draw the flag register of 8085μP and function of each of flag with example. [4 Marks]

2.
   A. Write an Assembly language program for sorting list of numbers in descending order [6 Marks]
   B. Explain the instruction set of 8086μP. [6 Marks]

3.
   A. What is DMA? Explain 8257 DMA controller with neat block diagram. [8 Marks]
   B. Explain interrupt structure of 8086μP. [4 Marks]

4.
   A. Explain the various modes of operation of 8255 PPI with neat block diagram. [6 Marks]
   B. Write an ALP to interface stepper motor to 8086 μP using 8255PPI.[6 Marks]

5.
   A. Explain concept of methods of serial communication with an example. [6 Marks]
   B. Explain the architecture of USART 8251 with neat diagram. [6 Marks]

6.
   A. Explain various string manipulation instructions of 8086μP with an example. [8 Marks]
   B. Write an ALP to move string from one memory to another memory. [4 Marks]

7.
   A. Explain ADC interfacing and hardware connections with 8086μP. [8 Marks]
   B. Write a short notes on IEEE 488. [4 Marks]

**********The End**********

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2016-2017)

Electronics & Communication Engineering
(SET - I)

Subject Name: DIGITAL COMMUNICATIONS | Subject Code: DC (EC3201)

Exam: E3_S2_EST | Max Marks: 60

Date: 24/04/2017 | Time: 3 Hours

ANSWER ANY **FIVE** QUESTIONS 5X12=60

1) [6x2=12M]

a) A real time speech signal band limited to 4 KHz is sampled at Nyquist rate and applied to PCM with 8-bit uniform encoder. Find the bit rate needed for transmission.

b) If the same signal is sampled at twice the Nyquist rate and applied to DPCM with 2-bit encoder, then find the bit rate needed for transmission.

c) If the signal is sampled at 6 times the Nyquist rate and applied to Delta Modulator, then find t[illegible] bit rate needed for transmission.

d) If average quantization noise power in above three cases is same, then which one will you r[illegible]5] and give the reason for it.(Assume that cost of each circuit is same).

e) Find the Bandwidth needed for transmitting the encoded signal in part (a) using 16-QAM.

f) Find the Bandwidth needed for transmitting the encoded signal in part (b) using QPSK. [illegible]1]

2) Consider a signal transmitted through a first BSC(Binary Symmetric Channel) with probability error 'P_1'; after that the signal is transmitted through a second BSC with probability of error 'P_2'.

a) Prove that the cascade of above two channels is also a BSC. And find the probability of error of the cascaded channel. **[6M]**

b) Find the channel capacity for the cascaded channel (use the existing formulas). **[6M]**

3) Consider a sampled signal 'X_i', where each sample value is a Random Variable with pdf

$$f_X(x) = \begin{cases} 0.2 & for\ x\epsilon[0,4) \\ 0.05 & for\ x\epsilon[4,8] \end{cases}$$

a) Find average signal (sample) power. **[2M]**

b) If uniform quantizer with 8- quantization levels is used, then find the average SQNR (signal to quantization noise power ratio). **[5M]**

c) If non –uniform quantizer is used,where [0,4) interval is sub-divided into 6 equal parts and [4,8] is sub-divided into 2 equal parts. Find the average SQNR. **[5M]**

4) Consider BPSK symbols as $S_0(t) = \sqrt{\frac{2}{T}}\cos(w_c t)$ for t ϵ [0, T]

$S_1(t) = -\sqrt{\frac{2}{T}}\cos(w_c t)$ for t ϵ [0, T]

a) Then find the corresponding basis function and signal vectors. If the symbols are transmitted through an AWGN channel with equal probability, with two sided noise power spectral density $N_0/2$ (assume that there is no attenuation in the channel). Then derive the expression for average probability of bit error. **[6M]**

b) In this problem, if repetition code with codeword length 3 is used for error correction purpose, then find the probability of data bit error. **[6M]**

5) Consider a hypothetical channel, where noise depends on transmitted signal. Transmitter transmits the symbols $S_1(t)$ or $S_2(t)$ with respective probabilities 1/3, 2/3. If we transmit $S_1(t)$, the received signal vector is as follows r= -1+N_1, where N_1 is additive noise with pdf $f_{N_1}(n_1)=e^{-n_1}$ for $n_1 \epsilon [0, \infty)$; If we transmit $S_2(t)$, the received signal vector is as follows r= 1+N_2, where N_2 is additive noise with pdf $f_{N_2}(n_2)=e^{n_2}$ for $n_2 \epsilon (-\infty, 0]$.

a) By using ML decision rule, find the threshold value of the comparator (decision device), and find the corresponding average probability of error. **[6M]**

b) By using MAP decision rule, find the threshold value of the comparator (decision device), and find the corresponding average probability of error. **[6M]**

6)

a) Find the orthonormal basis functions and signal vectors for the following symbols: **[6M]**

$S_1(t) = 1$ for t ϵ [0, 2]
$S_2(t) = 2$ for t ϵ [0, 3]
$S_3(t) = 3$ for t ϵ [2, 4]
$S_4(t) = 4$ for t ϵ [0, 4]

b) Describe any two advantages of CDMA. **[6M]**

7) Consider a source 'S' emitting one of the symbols S_1 ,S_2, S_3,S_4, or S_5 with respective probabilities 0.4, 0.3, 0.2, 0.05, 0.05. Then, **[3x4=12M]**

a) Find the Huffman code for this source.

b) Find average code word length (L_{avg}) of the above code, and variance of the codeword length.

c) Find entropy, H(S) of the source, and verify the whether the inequality $H(S) \leq L_{avg} \leq H(S)+1$ is satisfied or not ?

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR
(A.Y. 2016-2017)
Common for all Departments

Subject Name: Object Oriented Programming
Date: 01/05/2017
Exam: (E2&E3)S2EST

Subject Code: CS2203
Time: 180 Min
Max Marks: 60

B121742

NOTE:
i) This section carries 60 Marks.
ii) Five Questions need to be answered out of 7 Questions asked, each question carries 12 Marks.

1. Answer the following Questions.

I) Why we need to write static keyword to main method? [1]
(a) It gives access to other methods. (b) It is in syntax
(c) To create single copy (d) None of the above

II) Is the following fragment correct? [1]
```
class X {
    int meth(int a, int b) { ... }
    String meth(int a, int b) { ... }
}
```
false

III) Explain why you would use ***super*** in the body of a subclass's ***constructor*** and ***instance method***. Describe the concept of abstract class with syntax. [5]

IV) Explain single level and multiple inheritances in java. Write a program to demonstrate combination of both types of inheritances. Ie. Hybrid inheritance. [5]

2. Answer the following Questions.

I) Which of the following class is derived from the container class? [1]
(a) Component (b) Panel (c) MenuComponent (d) List

II) What is an event is delegation event model used by Java programming Language? [1]
(a) An event is an object that describes a state change in a source.
(b) An event is an object that describes a state change in a processing.
(c) An event is an object that desc ribes any change by the user and System
(d) An event is a class used for defining object, to create events.

III) What do you mean by MVC architecture? How the concept of inner classes is used in event handling? [5]

IV) Write a program to create a frame with exit capability. Handle events for mouse pressed, mouse released, and mouse clicked by displaying appropriate message describing the event and coordinates where the event has taken place. [5]

3. Answer the following Questions

I) Output of the below program is [1]

```
class Test {
        public static void main(String args[]) {
            System.out.println(10 + 20 + "Hello");
            System.out.println("Hello" + 10 + 20);
    } }
```

a. 30Hello
Hello30

b.1020Hello
Hello1020

c.30Hello
Hello1020

d.1020Hello
Hello30

II) In Java, a library of classes is called [1]

A. a folder B. a package C. a directory D. an application

III) Explain data type conversion and casting feature of java with an example program. [5]

IV) What is an array? Given 2 one dimensional arrays A and B which are sorted in ascending order. Write a Java program to merge them into a single sorted array, see that it contains every item from array A and B, in ascending order. [5]

4. Answer the following Questions. [1]

I) Over use of exceptions

a. is not an issue because exceptions may be used freely
b. is not an issue because the compiler restricts programmer-defined exceptions
c. is a problem because it causes an excessive number of class definitions
d. is a problem because it results in unrestricted flow of control

II) _____ is a collection of related classes that serves as a class library. [1]

III) Write the role of throw and throws in exception handling. [5]

IV) Explain the different access specifiers and their scope with example program. [5]

5. Answer the following Questions [1]

I) When would you use a private constructor?

a) If you want to protect your class's members from outside modification
b) If you want to disallow instantiation of that class from outside that class
c) Never, it's not allowed
d) In both (a) & (b)

II) What determines, what method will run in the following: [1]

```
Card crd = new BirthDay("sushma", 20);
    crd.greeting();
```

a) The type of the object.
b) The type of the reference variable.

III) Explain in detail about Dynamic method dispatching with an example program. [5]

IV) Consider a bank RBI, RBI is a class that provides a method to get the totalSumAmount[Basic + Interest] for 5 years with a rate of interest 10% with a basic 10,00,000. But, rate of interest may differ according to banks. For example, SBI, ICICI and AXIS banks are providing 8.4%, 7.3% and 9.7% rate of interest. Implement a Java application that displays all banks totalSumAmount's polymorphically. [5]

6. Answer the following Questions [1]

I) Which will contain the body of the thread?

a) run(); b) start(); c) stop(); d) main();

II) What is the output of this program? [1]

```
Import java.io.*;
class files {
        public static void main(String args[]) {
                File obj = new File("/java/system");
                System.out.println(obj.getName());
            }
}
```

a) java b) system c) java/system d) /java/system

III) Describe the need of thread synchronization. How is it achieved in Java programming? Explain with a suitable program. [5]

IV) Write a Program which accepts a file name and displays the number of characters, words, and lines in the file. [5]

7. Answer any six of the following Questions **Marks : 6 *2 = 12**

I. What are the Drawbacks in Procedure Oriented Language when compared with Object Oriented Language

II. Write a short notes on History of Java

III. Give any five major features of moving to Java Environment

IV. Define the following

a) Data Abstraction b) Encapsulation

V. What are the various types of comments used in java

VI. What are the various types of Keywords used in Java

VII. Define JDBC. What is the connection string url used in JDBC

VIII. Define Statement Object in JDBC Process

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2016-2017)

SOFT SKILLS

Subject: Soft Skills
Date: 29/04/2017
Exam: E3_SEM2/EST

B121742

Subject Code: HS3201
Time: 3 hrs.
Max Marks: 60

I. Read the following passage and answer the questions on the basis of information provided in the passage. **10 x 1 = 10**

Economists, ethicists and business experts persuade us that honesty is the best policy, but their evidence is weak. We hoped to find data that would support their theories and thus, perhaps, encourage higher standards of business behavior. To our surprise, their pet theories failed to stand up. Treachery, we found, can pay. There is no compelling economic reason to tell the truth or keep one's word. Punishment for the treacherous in the real world is neither swift nor sure.

Honesty is, in fact, primarily a moral choice. Business people do tell themselves that, in the long run, they will do well by doing good. But there is little factual or logical basis for this conviction. Without values, without a basic preference of right over wrong, trust based o n such delusion would crumble in the face of temptation. Most of us choose virtue because we want to believe in ourselves and because others respect and believe use.

And due to this, we should be happy. We can be proud of a system in which people are honest because they want to be, not because they have to be. Materially, too, trust based on morality provides great advantages. It allows us to join in great and exciting enterprises that we could never undertake if we relied on economic incentives alone.

Economists tell us that trust is enforced in the market place through retaliation and reputation. If you violate a trust, your victim is apt to seek revenge and others are likely to stop doing business with you, at least under favorable terms. A man or woman with a reputation for fair dealing will prosper. Therefore, profit maximisers are honest. This sounds plausible enough until you look for concrete examples. Cases that apparently demonstrate the awful consequences of trust turn out to be few and weak, while evidence that treachery can pay seems compelling.

1.) According to the passage, what do economists and ethicists, want us to believe?
   a) Businessmen should always be honest
   b) Businessmen cannot always be honest
   c) Businessmen turn dishonest at times
   d) Businessmen are honest only at times
2. What did the author find out about the theory that 'honesty is the best policy'?
   a) It is correct on many occasions
   b) It is correct for all businesses
   c) It is a useless theory
   d) It is a theory which seems to be correct only occasionally
3. Why are businessmen, according to the author, honest in their dealings?
   a) Businessmen are God-fearing

b) Businessmen choose to be honest
c) Businessmen are honest by nature
d) All businessmen are caught if they are dishonest

4. According to the author, which of the following is the reason for being honest in business?
   a) It gives no immediate benefits
   b) It gives no long-term benefits
   c) It makes person self-seeking
   d) None of the above
5. Why does the author say that one can be proud of the present saturation?
   a) People are self-respecting
   b) People are respect-seekers
   c) People are unselfish
   d) People are honest without compulsion
6. What is the material advantage which the author sees in being honest?
   a) It permits one to undertake activities which may not be economically attractive
   b) It permits one to be honest for the sake of honesty alone
   c) It permits one to be make a lot of profit in various areas
   d) It permits one to form various trusts to make profits
7. Why do businessmen, according to economists, remain honest?
   a) Dishonest businessmen can make more money
   b) Dishonest businessmen make money in the long run
   c) Dishonest businessmen cannot stay in business for long
   d) Dishonest businessmen are flogged in the market place
8. Which of the following phrases is most nearly the same in meaning as the word 'persuade' as it has been used in the passage?
   a) Give an assurance
   b) Give an opinion
   c) Try to convince
   d) Cheat
9. Which of the following is *false* according to the passage?
   a) Economists believe that all businessmen are dishonest
   b) Generally people are honest so as to earn self-respect
   c) Virtuous behavior earns the respect of others
   d) All dishonest men are not caught
10. Which of the following best describes what the author is trying to point out through the last sentence of the passage, 'Cases that….compelling'?
    a) The consequences of dishonesty
    b) Theories do not seem to be true
    c) Economists predict correctly
    d) The contradictions in the real world

II. Dialogue writing

(1 X 10 = 10)

1. Write a dialogue between two friends discussing about effect of social media on education system.

(OR)

2. Write a dialogue between you and stranger for seeking direction from RGUKT main gate to SAC building.

III. Letter Writing (1 X 10 = 10)

1. Write a letter to your father who is anxious to know how you are preparing for end semester exams.

(OR)

2. Write a letter to the principal of your college requesting him to issue your transfer, bonafide and conduct certificates.

IV. Essay Writing (1 X 10 = 10)

1. Describe about your favorite freedom fighter in your own words.

(OR)

2. Some people think that you can never become fluent in English language unless open your mouth. Do you agree? Write an essay using 500 words.

VI. Resume writing (1 X 10 = 10)

Prepare a curriculum vitae/ resume of you for next week campus placements in your college?

VII. Write a suitable article or preposition in the given blanks (1 X 5 = 5)

1. The ambulance men are attending to ___the___ injured.
2. Mrs Leela said to Lalli, 'I'm cooking the dinner. Please keep ___an___ eye on your little brother
3. She has been ill _____ (since/for) last month.
4. The cat pounced _____ (upon/on) the rat.
5. India is rich _____(in/with) minerals.

VIII. Correct the following sentences (1 X 5 = 5)

1. Lakshmi did not listened to the advices given by her parents.
2. My cousin brother, Subramanyam, lives in Mahboobnagar.
3. Neither of these pens are mine.
4. Myself will come to your house.
5. One should do his duty.

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE TECHNOLOGIES, BASAR

(A.Y. 2016-2017)

Computer Science and Engineering

Subject Name: Computer Networks

Subject Code: CS3204

Date: 22/04/2017

Exam: E3S2EST

Time:180 Min

Max Marks: 60

60567

Answer any (5) FIVE questions. 5*12=60 Marks

1. a) Explain layers in the TCP/IP model in detail with functionalities of each layer. (6M)

   b) Categorize the four basic topologies with the help of diagram and cite an advantage of each type. Assume five devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device? (6M)

2. a) Explain how slotted aloha improves the performance of pure aloha. Discuss briefly about the token passing. (6M)

   b) What is the difference between error detection and correction? Explain any one error correction technique with suitable example. (6M)

3. a) Explain the TCP Segment structure and justify the importance of its field values. (6M)

   b) What is traffic shaping? Explain two methods to shape traffic. Which one is better and why? (6M)

4. a) If the IP address of the system is 193.220.5.0 and we need to have 16 subnets with 14 hosts per subnet. (6M)
   a. Find the subnet mask.
   b. Find the first and the last address in the first subnet.
   c. Find the first and the last address in the last subnet.

5. b) With a suitable example explain Distance Vector Routing algorithm. What is the serious drawback of Distance Vector Routing algorithm? Explain (6M)

6. a) Differentiate between IPV4 and IPV6 with Header format. (6M)

   b) What is ARP? Explain how it will work. (6M)

7. a) Explain TELNET in detail. (6M)

   b) Explain E-mail service with SMTP, POP3 and IMAP. (6M)

8. Define the followings(Any four)
   a. ICMP error reporting messages (3M)
   b. DHCP (3M)
   c. Three-way handshaking (3M)
   d. URL (3M)
   e. HTTP (3M)