

**Department of Higher Education**  
**University of Computer Studies, Hinthada**  
**Third Year (B.C.Sc./B.C.Tech.)**  
**Mid-Term Examination**  
**English**  
**March, 2018**

**Answer All Questions.**

**Time Allowed: 3 Hours**

**QUESTION I.**

**(20 Marks)**

**Read the passage below and answer the following questions.**

**A.** A water is the giver and, at the same time, the taker of life. It covers most of the surface of the planet we live on and features large in the development of the human race. On present predictions, it is an element that is set to assume even greater significance.

**B.** Throughout history, water has had a huge impact on our lives. Humankind has always had a rather ambiguous relationship with water, on the one hand receiving enormous benefit from it, not just as a drinking source, but as a provider of food and a means whereby to travel and to trade. But forced to live close to water in order to survive and to develop, the relationship has not always been peaceful or beneficial. In fact, it has been quite the contrary. What has essentially been a necessity for survival has turned out in many instances to have a very destructive and life-threatening side.

**C.** Through the ages, great floods alternated with long periods of drought have assaulted people and their environment, hampering their fragile fight for survival. The dramatic changes to the environment that are now a feature of our daily news are not exactly new: fields that were once lush and fertile are now barren; lakes and rivers that were once teeming with life are now long gone; savannah has been turned to desert. What perhaps is new is our naïve wonder when faced with the forces of nature.

**D.** Today, we are more aware of climatic changes around the world. Floods in far-flung places are instant hews for the whole world. Perhaps these events make us feel better as we face the destruction of our own property by floods and other natural disasters.

**E.** In 2002, many parts of Europe suffered severe flood damage running into billions of euros. Properties across the continent collapsed into the sea as waves pounded the coastline wreaking havoc with sea defences. But it was not just the seas. Rivers swollen by heavy rains and by the effects of deforestation carried large volumes of water that wrecked many communities.

**F.** Building stronger and more sophisticated river defences against flooding is the expensive short-term answer. There are simpler ways. Planting trees in highland areas, not just in Europe but in places like the Himalayas, to protect people living in low-lying regions like the Ganges Delta, is a cheaper and more attractive solution. Progress is already being made in convincing countries that the emission of carbon dioxide and other greenhouse gases is causing considerable damage to the environment. But more effort is needed in this direction

**G.** And the future? If we are to believe the forecasts, it is predicted that two-thirds of the world population will be without fresh water by 2025. But for a growing number of regions of the world, the future is already with us. While some areas are devastated by flooding, scarcity of water in many other places is causing conflict. The state of Texas in the United States of America is suffering a shortage of water with the Rio Grande failing to reach the Gulf of Mexico for the first time in 50 years in the spring of 2002, pitting region against region as they vie for water sources. With many parts of the globe running dry through drought and increased water consumption, there is now talk of water being the new oil.

**H.** Other doom-laden estimates suggest that, while tropical areas will become drier and uninhabitable, coastal regions and some low-lying islands will in all probability be submerged by the sea as the polar ice caps melt. Popular exotic destinations now visited by countless tourists will become no-go areas. Today's holiday hotspots of southern Europe and elsewhere will literally become hotspots - too hot to live in or visit. With the current erratic behaviour of the weather, it is difficult not to subscribe to such despair.

**I.** Some might say that this despondency is ill-founded, but we have had ample proof that there is something not quite right with the climate. Many parts of the world have experienced devastating flooding. As the seasons

revolve, the focus of the destruction moves from one continent to another. The impact on the environment is alarming and the cost to life depressing. It is a picture to which we will need to become accustomed.

Questions 1-7 : Choose the correct heading for paragraphs A-G from the list of headings below.

1. Paragraph A
2. Paragraph B
3. Paragraph C
4. Paragraph D
5. Paragraph E
6. Paragraph F
7. Paragraph G

**List of Headings**

- i Environmental change has always been with us
- ii The scarcity of water
- iii Rivers and seas cause damage
- iv Should we be despondent? Or realistic?
- v Disasters caused by the climate make us feel better
- vi Water, the provider of food
- vii What is water?
- viii How to solve flooding
- ix Far-flung flooding
- x Humans' relationship with water

Questions 8-10: Choose the correct letter A, B, C or D.

8. According to the text, planting trees

- (A) has to be co-ordinated internationally.
- (B) is more expensive than building sea and river defences.
- (C) is a less expensive answer to flooding than building river defences.
- (D) is not an answer to the problem of flooding in all regions.

9. By 2025, it is projected that

- (A) at least half the world population will have fresh water.
- (B) the majority of the world population will have fresh water.
- (C) one-third of the world population will have fresh water.
- (D) fresh water will only be available to half of the world population.

10. According to the text, in the future low-lying islands

- (A) will still be habitable.
- (B) will not be under water.
- (C) are likely to be under water.
- (D) will probably not be under water.

**QUESTION II.**

**(20 Marks)**

II. (A). There is a verb in the wrong tense in each item. Find the error and correct it. Just write down the number and the answer.

1. The bus will not arrive until 7:30 in the evening.
2. What are you doing this time next year?
3. I think it is being extremely hot there.
4. Tonight we will hold an international evening, with lots of food from different countries.
5. When I will find the answer, I will let you know.
6. By the year 2021, the population of Australia will have been reaching a maximum of 23.3 million.
7. I will text you before we are setting off.
8. Have a great time and we are going to see you when you get back.
9. The prime minister opens the debate in parliament tomorrow.
10. If you are career-driven, you need a course relevant to your profession.

II. (B). Put the verbs into the correct form (will, going to, simple present or present continuous).

1. I love London. I ----- (probably / go) there next year.
2. Our train ----- (leave) at 4:47pm.
3. What ----- (you / wear) at the party tonight?
4. I haven't made up my mind yet. But I think I ----- (find) something nice in my mum's wardrobe.
5. This is my last day here. I ----- (go) back to England tomorrow.
6. Hurry up! The conference ----- (begin) in 20 minutes.
7. My horoscope says that I ----- (meet) an old friend this week.
8. Look at these big clouds! It ----- (rain).
9. Here is the weather forecast. Tomorrow ----- (be) dry and sunny.

10. What does a blonde say when she sees a banana skin lying just a few meters in front of her?  
Oh dear! I ----- (slip)!

**QUESTION III.**

**(20 Marks)**

III. Fill the gaps in the following paragraph using the words in the box.

or	could	be	block	in	vision	turns	matter
bit	sense	relied	echoes	One	without	adapted	obstacles
the	technique	measure	engineers				

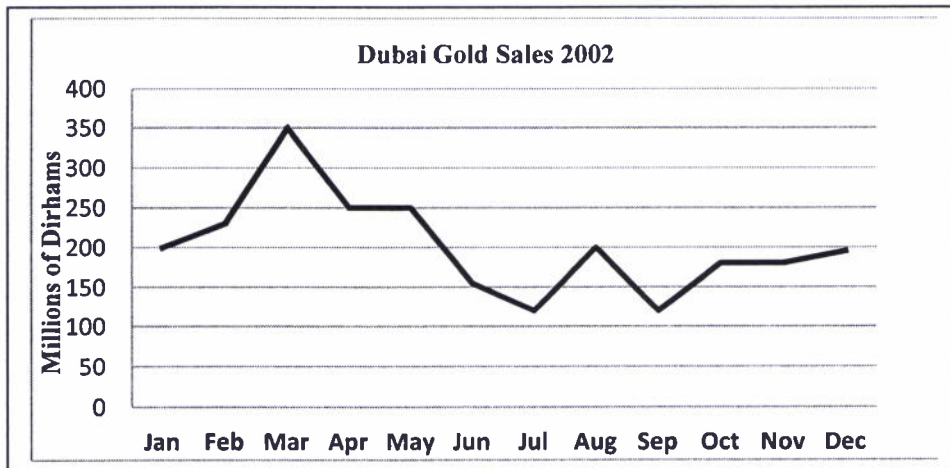
Blind humans sometimes seem to have an uncanny sense of ----(1)---- in their path. It has been given the name 'facial----(2)----', because blind people have reported that it feels a ----(3)---- like the sense of touch, on the face. ----(4)---- report tells of a totally blind boy who ----(5)----ride his tricycle at good speed round the --(6)---- near his home, using facial vision. Experiments showed that, ----(7)---- fact, facial vision is nothing to do with touch ----(8)---- the front of the face, although the sensation may ----(9)---- referred to the front of the face, like ----(10)---- referred pain in a phantom limb. The sensation of facial vision, it ----(11)---- out, really goes in through the ears.

Blind people, ----(12)---- even being aware of the fact, are actually using ----(13)---- of their own footsteps and of other sounds, to ----(14)---- the presence of obstacles. Before this was discovered, ----(15)---- had already built instruments to exploit the principle, for example to ----(16)---- the depth of the sea under a ship. After this ----(17)---- had been invented, it was only a ----(18)----of time before weapons designers ----(19)---- it for the detection of submarines. Both sides in the Second World War ----(20)---- heavily on these devices, under such codenames as Asdic (British) and Sonar (American), as well as Radar (American) or RDF (British), which uses radio echoes rather than sound echoes.

**QUESTION IV.**

**(20 Marks)**

IV. (A). The line graph below shows estimated sales of gold in Dubai for 12 months in 2002 in millions of Dirhams. Summarize the information by selecting and reporting the main features, and make comparisons where relevant.



IV. (B). Answer the following questions.

1. How do you usually spend your weekends?
2. What do people usually do on the weekends in your country?
3. What do you usually do on weekends?
4. Why are weekends important to you?
5. What are you going to do next weekends?

**QUESTION V.**

**(20 Marks)**

V. Write the following topic:

**"Some people say that computers have made life easier and more convenient. Other people say that computers have made life more complex and stressful. To what extent do you agree or disagree?" (Write at least 250 words.)**

\*\*\*\*\*END\*\*\*\*\*

**Department of Higher Education**  
**University of Computer Studies, Hinthada**  
**Third Year (B.C.Sc./B.C.Tech.)**

**Mid Term Examination**

**Structured Computer Organization + Assembly Language (CST-301)**

**March, 2018**

**Answer All Questions.**

**Time Allowed: 3 Hours**

1. (a) State whether the following statements are **TRUE** or **FALSE**. **(5 marks)**

- (i) Flip-flops can be combined in groups to create registers, which hold data types larger than 1 bit in length.
- (ii) MDR stores the location or address of operand for read or write memory operation.
- (iii) A three-to-eight decoder circuit used OR gate as the final stage.
- (iv) A synchronous bus has a line driven by a crystal oscillator.
- (v) Register addressing is a technique for specifying global variables.

1. (b) Choose the correct or the best alternative in the followings: **(5 marks)**

- (i) \_\_\_\_\_ is a region of memory containing the program.  
 A. Constant pool    B. Method area    C. Local variable frame    D. Operand stack
- (ii) A method for specifying an operand in memory is just to give its full address this mode is called \_\_\_\_\_.  
 A. indexed addressing    B. register addressing    C. indirect addressing    D. direct addressing
- (iii) The control store's memory address register is called \_\_\_\_\_.  
 A. MIR    B. MBR    C. MPC    D. MBRU
- (iv) There are \_\_\_\_\_ OR gates in 4 x 3 memory.  
 A. 22    B. 3    C. 18    D. 8
- (v) \_\_\_\_\_ routes its single input signal to store of  $2^n$  output, depending on the value of n control lines.  
 A. Demultiplexer    B. Multiplexer    C. Decoder    D. Comparator

1. (c) Match each of items in List-1 with the appropriate answer in List-2. **(5 marks)**

List-1	List-2
(i) Instruction set architecture level	(A) Level 1
(ii) Assembly language level	(B) Level 2
(iii) Microarchitecture level	(C) Level 3
(iv) Problem-oriented language level	(D) Level 4
(v) Operating system machine level	(E) Level 5

2. Define **ANY FOUR** of the followings: **(8 marks)**

- (i) Translator
- (ii) Ripple carry adder
- (iii) Noninverting buffer
- (iv) MIR
- (v) Bus

3. (a) Briefly explain about the operation of an asynchronous bus. **(4 marks)**

3. (b) Draw a 64M x 8 bit memory chip using n x n matrices. Calculate the size of this memory chip in bit. **(4 marks)**

3. (c) A computer with a 50-MHz bus requires four cycles to read a word. The time taken after the address is stable to get a word from memory takes 54 nsec. The address output delay ( $T_{AD}$ ) is 11 nsec. How much the data setup time ( $T_{DS}$ )? **(4 marks)**

3. (d) Draw a logic diagram for 2 x 2 memory organization. **(5 marks)**

3. (e) Draw a circuit diagram for the new 1-bit ALU to compute any one of the four functions namely A NOR B, A XOR B, A AND B and A+B depending on whether the functions select input lines. **(8 marks)**
4. (a) How many microinstructions do MIC-1 and MIC-2 take to execute the following Java Statement. "x = y - z;" **(4 marks)**
4. (b) Convert the following Java code to IJVM instructions. **(5 marks)**

```
x = y;
z = y - 1;
while ( z > 0) do{
    x = x + y;
    z = z - 1; }
```

4. (c) Write the detail of MIR to represent the following IJVM instructions: **(7 marks)**

Label	Operations
iinc 1	H= LV
iinc 2	MAR= MBRU+ H; rd
iinc 3	PC= PC+1; fetch
iinc 4	H= MDR
iinc 5	PC= PC+1; fetch
iinc 6	MDR= MBR+ H; wr;
Main1	PC=PC+1; fetch; goto(MBR)

5. (a) Compare 0-,1-,2- and 3- address machine by writing program to compute  $X = (A + B) / (C - D) + E$

for each of the four machines. The instructions available for use are as follows:

0-address	1-address	2-address	3-address
PUSH M	LOAD M	MOV (X=Y)	MOV (X=Y)
POP M	STORE M	ADD (X=X+Y)	ADD (X=Y+Z)
ADD	ADD M	SUB (X=X-Y)	SUB (X=Y-Z)
SUB	SUB M	MUL (X=X*Y)	MUL (X=Y*Z)
MUL	MUL M	DIV (X=X/Y)	DIV (X=Y/Z)
DIV	DIV M		

M is a 16 bits memory address and X, Y, Z are either 16 bit addresses or 4 bit registers. With 8 bit opcodes and instruction lengths that are multiple of 4 bits, how many bits does each machine need to compute X? **(12 marks)**

5. (b) Convert the following formulas from reverse Polish notation to infix. **(4 marks)**
- (i) ABCDE + \* \* /                      (iii) AB +C+D+
- (ii) ABC\*+D -                            (iv) AB +CD-\* EF -G H + \* /

6. Answer the following questions. **(6 marks)**
- (i) Give 2 examples of illegal moves.
- (ii) Name the four segment registers.
- (iii) Write the hexadecimal and binary representation of the character 'W', using the ASCII table.

7. (a) Write an assembly language program that display a sequence: 5ZYX 4WVU 3TSR 2QPO 1NML on the screen. (Hint: use nested loop and stack) **(7 marks)**
7. (b) Write an assembly language program that inputs a string of up to 30 characters and a character that can be searched from the console. Find the count of searched character in the input string and display it. **(7 marks)**

```
The screen display should resemble the following:
Enter a string                    : Computer University
Enter a character                : r
Count                             : 2
```

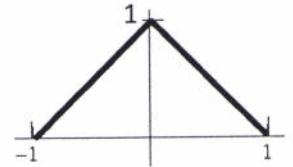
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**Department of Higher Education**  
**University of Computer Studies, Hinthada**  
**Third Year (B.C.Sc./B.C.Tech.)**  
**Mid-Term Examination**  
**Mathematics of Computing III (CST-302)**  
**March, 2018**

**Answer All Questions.**

**Time Allowed: 3 Hours.**

1. (a) Find the Fourier series of the function  $f(x) = \begin{cases} \pi - x, & 0 < x < \pi \\ -\pi - x, & -\pi < x < 0 \end{cases}$ , which is assumed to have the period  $2\pi$ . Sketch or graph the partial sums up to that including  $\cos 5x$  and  $\sin 5x$ .



- (b) Is the function (shown in figure) even or odd or neither even nor odd? Find its Fourier series. Show details of your work.
2. (a) Find the Fourier sine integral of

$$f(x) = \begin{cases} 1, & \text{if } 0 < x < 1. \\ 0, & \text{if } x > 1. \end{cases}$$

- (b) Find the Fourier cosine transform for  $f(x) = x$ , if  $0 < x < 2$ ,  $f(x) = 0$ , if  $x > 2$ .
- (c) Let  $z_1 = -2 + 11i$ ,  $z_2 = 2 - i$ . Find (i)  $(z_1 + z_2)(z_1 - z_2)$ , (ii)  $z_1^2 - z_2^2$  showing the details of your work in the form  $x + iy$ .
3. (a) Find all roots of  $\sqrt[4]{i}$  and graph these roots in the complex plane.
- (b) Is the function  $v = (2x + 1)y$  harmonic? If your answer is yes, find a corresponding analytic function  $f(z) = u(x, y) + iv(x, y)$ .

4. (a) Show that  $\sin z = \sin x \cosh y + i \cos x \sinh y$ .
- (b) Three screws are drawn at random from a lot of 100 screws, 10 of which are defective. Find the probability of the event that all 3 screws drawn are non-defective, assuming that we draw (i) with replacement, (ii) without replacement.
- (c) Let  $X$  [ millimeter's] be the thickness of washers. Assume that  $X$  has the density  $f(x) = kx$  if  $0.9 < x < 1.1$  and 0 otherwise. Find  $k$ . What is the probability that a washer will have thickness between 0.95 mm and 1.05 mm?

5. (a) Find the mean and variance of the random variable  $X$  with probability function or density  $f(x) = Ce^{-\frac{x}{2}}$  ( $x = 0$ ).
- (b) If on the average, 5 cars enter a certain parking lot per minute, what is the probability that during any given minute 6 or more cars will enter the lot?
- (c) Suppose that in the production of 60-ohm radio resistors, non-defective items are those that have a resistance between 58 and 62 ohms and the probability of a resistor's being defective is 0.1 %. The resistors are sold in lots of 200, with the guarantee that all resistors are non-defective. What is the probability that a given lot will violate this guarantee? (Use the Poisson distribution).

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**Department of Higher Education**  
**University of Computer Studies, Hinthada**  
**Third Year (B.C.Sc./B.C.Tech.)**  
**Mid-Term Examination**  
**Data and Computer Communications I (CST-303)**  
**March, 2018**

**Answer All Questions.**

**Time Allowed: 3 Hours**

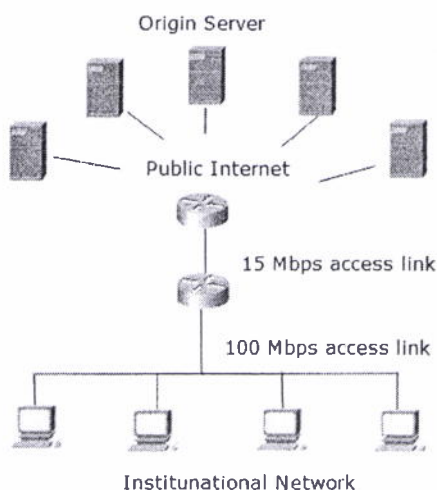
1. Choose the correct answer to the following questions. **(20 marks)**
- a. A transmission media can have signal impairment because of
- (a) Noise (b) Attenuation  
(c) Distortion (d) All of above
- b. Which of the following is not a guided medium?
- (a) Twisted pair cable (b) Coaxial cable  
(c) Fiber optic cable (d) Atmosphere
- c. Which quantization level results in a more faithful reproduction of the signal?
- (a) 2 (b) 8  
(c) 16 (d) 32
- d. In ----- transmission, bits are transmitted over a single wire, one at a time.
- (a) Asynchronous Serial (b) Synchronous Serial  
(c) Parallel (d) (a) and (b)
- e. In Go-back-N ARQ, if frames 4,5, and 6 are received successfully, the receiver may send an ACK ----- to the sender.
- (a) 6 (b) 7  
(c) 5 (d) Any of the above
- f. Membership in a VLAN can be based on -----.
- (a) MAC address (b) IP address  
(c) Port address (d) All of the above
- g. IEEE has defined the specifications for a wireless LAN, called ----- , which cover the physical and data link layers.
- (a) IEEE 802.5 (b) IEEE 802.11  
(c) IEEE 802.2 (d) IEEE 802.3
- h. Which of the following protocol is/are defined in Transport layer?
- (a) FTP (b) TCP  
(c) UDP (d) (b) and (c)
- i. The ----- translates internet domain and host names to IP address.
- (a) Domain Name System (b) Routing information protocol  
(c) Network time protocol (d) Internet relay chat
- j. When displaying a web pages, the application layer uses the
- (a) HTTP protocol (b) FTP protocol  
(c) SMTP protocol (d) None of the mentioned

2. Write short notes on **ANY FOUR** of the followings. (20 marks)
- (a) Thermal noise
  - (b) VSAT system
  - (c) Half duplex and Full duplex transmission
  - (d) ASK ( Amplitude Shift Keying)
  - (e) Stop-and-Wait ARQ
  - (f) Two link configurations in HDLC

- 3.(a) How do you choice the topology at designing a LAN? (10 marks)
- (b) List the requirements of Wireless LAN and describe three categories according to the transmission techniques. (10 marks)

- 4.(a) How do you understand the delay in Packet-Switched Network? List the type of delay. (10 marks)
- (b) What is the difference between viruses, worms, Trojans, botnet and malware? (10 marks)

5. (a)The following figure shows two networks that are institutional network and public network. The router in the institutional network and a router in the internet are connected by a 15Mbps link. Suppose that the average size is 1Mbits and that the average request rate from the institution's browser to the origin server is 20 requests per second. Suppose that access delays in two routers are 2 seconds on average. Calculate the traffic intensity on the LAN and access link. And then, without upgrading the access link, we installed a web cache in the institution network. Let consider the hit rates such as 40 % satisfied the cache and 60% satisfied the origin server on 10 milliseconds. Finally, calculate the average delay in two networks.



(10 marks)

- (b) Discuss resource records (RRs) in DNS distributed database and how to illustrate four- tuples in RRs? (10 marks)

\*\*\*\*\*END\*\*\*\*\*



**Department of Higher Education**  
**University of Computer Studies, Hinthada**  
**Third Year (B.C.Sc.)**  
**Mid-Term Examination**  
**Software Engineering (CS-304)**  
**March, 2018**

**Answer All Questions.**

**Time Allowed: 3 Hours**

1. Choose the answer(s) for the following statements: (15 marks)
- (1) RAD stands for  
(A) recursive application development (B) rapid application development  
(C) random application development (D) regular application development
  - (2) An iterative process of developing an experimental system that is not intended for development by the customer.  
(A) Prototyping (B) Incremental development (C) Waterfall system (D) Spiral
  - (3) The practice that tackles the unanticipated change implementation problem.  
(A) Test first development (B) Pair programming (C) Refactoring (D) Collective ownership
  - (4) The practices that developers are work together, checking each other's work and providing the support to always do a good job.  
(A) Test first development (B) Pair programming (C) Refactoring (D) Collective ownership
  - (5) A testing method that the software system meets the customer's expectations.  
(A) Validation (B) Verification (C) Debugging (D) Inspection
  - (6) Which of the following Cleanroom process teams develops set of statistical test to exercise software after development?  
(A) Specification team (B) Development team (C) Certification team (D) None of these
  - (7) The static analysis that checks the consistency of routine and procedure declaration and their use.  
(A) Control flow analysis (B) Data use analysis (C) Interface analysis (D) Path analysis
  - (8) A software development philosophy that uses formal methods to support rigorous software inspection.  
(A) Cleanroom software development (B) Closeroom software development  
(C) Clearroom software development (D) None of the above
  - (9) What is Cyclomatic complexity?  
(A) Black box testing (B) White box testing (C) Yellow box testing (D) Green box testing
  - (10) When a new increment is integrated, it is difficult to identify that whether the previous or new system increments have defects. To encounter this problem, you have to make  
(A) release testing (B) regression testing (C) recursive testing (D) rerun testing
  - (11) The testing process that test the behavior or the emergent properties of the system is called  
(A) release testing (B) regression testing (C) component testing (D) performance testing
  - (12) These are interfaces where a block of memory is shared between components.  
(A) Shared memory interfaces (B) Procedural interfaces  
(C) Message passing interfaces (D) Parameter interfaces
  - (13) A calling component misunderstand the specification of the interface of the called component.  
(A) Interface misuse (B) Interface misunderstanding (C) Timing error (D) None of these
  - (14) In the incremental and iterative development, continual change tends to corrupt the structure of the software system. It encounter \_\_\_\_\_.  
(A) management problems (B) contractual problems  
(C) validation problem (D) maintenance problems

(15) The objective of the Cleanroom software development is to get \_\_\_\_\_.

- (A) zero-defect software                      (B) one-defect software  
(C) more-defect software                      (D) many-defect software

2. (a) Rapid application development techniques are used for developing applications that are data-intensive. Describe the tools that are included in the RAD environment. (5 marks)
2. (b) Software prototype is the initial version of a software system. Which software development process can be used for the software prototype and how? Define the benefits and disadvantages of using the software prototype. (10 marks)
3. (a) Is testing (verification and validation) and debugging are the same? Describe the goals of testing and debugging. (5 marks)
3. (b) Test planning is needed to careful to control the costs of the verification and validation process. What major components are needed to include in the software test plan? (10 marks)
4. (a) Component testing is process of testing individual components in the system. Define the goal of component testing and the type of component that can be tested. (5 marks)
4. (b) Interface testing is concerned with testing the component interface behaves according to its specification. What are the types of interface error and classes that can be occurred? (5 marks)
5. (a) Consider the following program code and find all fault classes and describe type of faults you found in the program. (10 marks)

```
public class decimalBinaryTest{
    public static void main(String[] args){
        decimalBinaryTest obj = new decimalBinaryTest();
        system.out.println("Binary");
        obj.convertBinary(124);
    }
    public static void convertBinary(int num){
        int binary[] = new int[40];
        int index;
        while (num > 0){
            binary [index++] = num % 2;
            num = num / 2;
        }
        for (int i=index-1; i >= 0; i --){
            system.out.println (binary[i]); }
    }
    public static int add (int num1, int num2){
        return num1+num2;
    }
}
```

5. (b) Consider the following quick sort algorithm and design test case to test the array using the partitioning testing method and structural testing method. (10 marks)

```
public static int partition ( int arr[], int left, int right )
{
    int i=left, j=right; int tmp;
    int pivot = arr[(left + right)/2];
    while(i<=j){
        while (arr[i]<pivot)
            i++;
        while (arr[i]>pivot)
            j--;
        if (i<=j){
            tmp=arr[i] ; arr[i]=arr[j]; arr[j]=tmp; i++; j--; }
    }; return i;
}
```

```

public void quicksort(int arr[], int left, int right){
    int index = partition(arr, left, right);
    if(left < index -1) { quicksort(arr,left,index-1);}
    if(index < right) { quicksort(arr,index, right);}
}

```

5. (c) Determine the control flow graph, the cyclomatic complexity and possible paths for the following program. (15 marks)

```

public static int power (int left, int right){
(1)    int rslt;
(2)    rslt = Left;
(3)    if (Right == 0) {
(4)        rslt = 1;
    }
    else {
(5)    for (int i = 2; i <= Right; i++)
(6)        rslt = rslt * Left;
    }
(7)    return (rslt);    }

```

5. (d) For the following faulty program, answer the following questions. (10 marks)

```

public static int lastZero (int[] x) {
//Effects: if x==null throw NullPointerException
// else return the index of the LAST 0 in x.
//Return -1 if 0 does not occur in x
    for (int i = 0; i < x.length; i++) {
        if (x[i] == 0) {
            return i;
        }
    }
    return -1;
}
// test: x=[0, 1, 0]
// Expected = 2

```

- Identify the fault.
- If possible, identify a test case that does **not** execute the fault.
- If possible, identify a test case that executes the fault, but does **not** result in an error state.
- If possible identify a test case that results in an error, but **not** a failure. Hint: Don't forget about the program counter.
- For the given test case, identify the first error state. Be sure to describe the complete state.
- Fix the fault and verify that the given test now produces the expected output.

\*\*\*\*\* END \*\*\*\*\*

**Department of Higher Education**  
**University of Computer Studies, Hinthada**  
**Third Year (B.C.Sc.)**  
**Mid Term Examination**  
**Computer Application Technique III (CS-305)**  
**March, 2018**

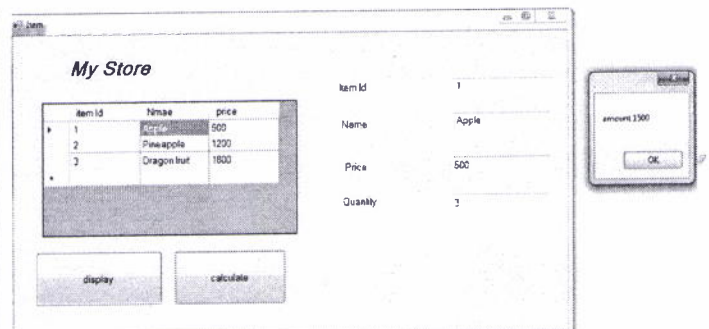
**Answer all Questions**

**Time Allowed: 3 Hours**

1. Write C# statements for following. **(20 marks)**
  - (a) Create an array named Friends with the following elements. "Kathy", "Mary", "Windy", "Jay", "Richard". And then display on console. **Using (For each statement)**
  - (b) Define an Action type delegate to refer to a lambda expression method that accept two arguments (width and height) area of rectangle, calculate area and display result in console application .Invoke the Action delegate with suitable integer width and integer height.
  - (c) Create an array with given items "30.80,40,60,10,70,90.20.40.80".Display items which are greater than equal 80 and less than 40.(Use **lambda expression and LINQ query extension method.**)
  - (d) Create a Queue collection object and add the name of 3 students. Display the name of all students on console window.
  - (e) Define a class Shape, define the method is Area().The Area() method takes "int" type parameter and calculate the area of rectangle and display in console window.
  
- 2.(a)Create an interface named "ITransaction" with a method "void showTransaction()". Create a class which implements "ITransaction" interface. It includes a string data members "TCode" and a double data member "Amount" by using auto-implemented property. Create a method "showTransaction()" that displays the values of all data members. Create an instance with two parameters and calls showTransaction() method to display information. **(6 marks)**
- 2.(b) Create a Class with three members and create add method with three version: first take a parameter and return it, second , take two parameters and return the result of addition of them; third, take three parameters and return the result of addition of them. Write that create an instance of class and called the method of instance with different number of arguments and display in console window. **(Using Function Overloading )** **(6 marks)**
- 2.(c) Create a Stack Collection objet and add the names of 7 days. Remove top item in Stack and display it. And then all remaining item are display in console window. **(6 marks)**
  
3. Create **window form application project** with following. **(12 marks)**  
 Create a project that will display the information of "Item". Item Information store in array. At the start of the form, user click the "Display" button, all records are displays in data grid view. When user selected record in data grid view, desired records will be displayed in related text boxes. When user enter in "quantity" in text box and user click the "Calculate" button, amount display in message box.

Item information display in data grid view as show below

Item Id:1	Name: Apple	Price:500
Item Id:2	Name: Pineapple	Price:1200
Item Id:3	Name: Dragonfruit	Price:1800



4.(a) Draw up the **Cash Budget** for the **four months from January to April** using following information. **(10 marks)**

Sales	The firm expects to sell 200 units each month for a price of \$ 25 each. It will offer two month's credit and so will not receive the first payment until March.
Purchases	Purchase will also be at rate of 200 units per month and will cost \$ 10 per unit. Supplier offer one month's credit.
Wages	The firm is initially employing two assistant who will be paid \$ 100 per week each.
Sundry expenses	Other expense are expected to be \$ 200 for the first three months and \$100 thereafter.
Rent	Building have been acquired at a rental of \$ 2000 per annum and quarterly payable in advance
Machinery	The firm will require a machine costing \$1500 in first month's trading.

4.(b) A firm that uses budgetary control techniques has devised a budgeted Profit & Loss account for the year ended May 2011. The actual figures have now been received and the profit & Loss account drawn up. The details are as follows:

**Required:** Devise a Flexible budget for 12,000 units and calculate any variances. **(10 marks)**

	Budgeted	Actual
Sales in units	10,000	12,000
	\$	\$
Revenue	25,000	31,000
Materials	6,000	7,850
Direct Labour	4,500	5,450
Production Overheads	3,000	2,850
Selling Overheads	3,800	3,900
Administration Overheads	4,000	4,000
Net Profit	3,700	6,950

5.(a) The AAA Ltd, is deciding whether to replace on old with newer type of machine. The new machine is intended to cost at \$ 300,000. The newer type of machine has life 3 years with residual value \$ 25,000. It is assumed that the demand for the further 3 years only and will be as follows;

Years	1	2	3
Possible demand	\$ 240,000	\$ 300,000	\$320,000
Produced ( Units)	12,000	15,000	19,000

Unit operating cost ( variable cost ) is \$ 10  
 Loan: 100,000 at 18% cost of capital  
 Equity 200,000 at 15% cost of capital

The present value of \$ 1 is :

	10%	12%	15%	16%	20%
Year 1	0.909	0.893	0.870	0.862	0.833
Year 2	0.826	0.797	0.756	0.743	0.694
Year 3	0.751	0.712	0.658	0.641	0.579
Year 4	0.683	0.636	0.572	0.552	0.482

The present value of an ordinary annuity of \$1 is:

	10%	12%	15%	16%	120%
Year 1	0.909	0.893	0.870	0.862	0.833
Year 2	1.736	1.690	1.626	1.593	1.528
Year 3	2.487	2.402	2.283	2.189	2.106
Year4	3.170	3.037	2.855	2.670	2.589

(a) Calculate the Weighted Average Cost of Capital to the nearest whole percent

(b) Prepare NPV for this new machine, using the percentage rate calculated in (a). Give suggestion whether to accept or not to accept the new machine.

(c) Calculate the Payback Period of this machine. **(20 marks)**

5.(b) Explain about the Capital Budgeting System and Investment Management System. **(10 marks)**

\*\*\*\*\*END\*\*\*\*\*

**Department of Higher Education**  
**University of Computer Studies, Hinthada**  
**Third Year (B.C.Sc.)**  
**Advanced Java Programming (CS-306)**  
**Mid Term Examination**  
**March, 2018**

**Answer All Questions.**

**Time Allowed: 3 Hours**

**1. Choose the correct answers for the following questions. (10 marks)**

- (i) In client-server architecture, component that processes the request and sends the response is  
A. Client    B. Protocol    C. Server    D. Network
- (ii) Which of these packages contains classes and interfaces for networking?  
A. java.io    B. java.util    C. java.net    D. java.network
- (iii) An RMI server is responsible for \_\_\_\_\_.  
A. Creating an instance of the remote object    B. Exporting the remote object  
C. Binding the instance of the remote object to the RMI registry    D. All of them
- (iv) What is not a session tracking method?  
A. URL rewriting    B. History    C. Cookies    D. SSL Sessions
- (v) Which technology do we mix our business logic with the presentation logic?  
A. Servlet    B. JSP    C. Both A & B    D. None of them
- (vi) Which tag is used to execute java source code in JSP?  
A. Declaration tag    B. Scriptlet tag    C. Expression tag    D. None of them
- (vii) Which action tags are used in JSP for developing web application with Java Bean?  
A. jsp:useBean    B. jsp:setProperty    C. jsp:setProperty    D. Both B & C
- (viii) Which option is true about session scope?  
A. Objects are accessible only from the page in which they are created  
B. Objects are accessible only from the pages which are in same session  
C. Objects are accessible only from the pages which are processing the same request  
D. Objects are accessible only from the pages which reside in same application
- (ix) Servlets are used to program which component in a web application?  
A. Client    B. Server    C. Tomcat    D. Applet
- (x) Which interfaces provide methods for batch processing in JDBC?  
A. java.sql.Statement    B. java.sql.PreparedStatement    C. All of them    D. None of them

2. Write a client-server program to calculate the Area and Perimeter of a Square and Rectangle. Client accepts the length of Square, the width and height of the Rectangle and sends it to the server. The server calculates and returns the results. Client displays all the results of the Square and Rectangle.

**(15 marks)**

3. Complete the following RMI programs.

**(15 marks)**

`/* BankInterface.java */`

```
import java.rmi.*;
public interface BankInterface extends ----(i)-----{
    public double deposit(intaccountNo, double amount) throws -----(ii)-----;
    public double withdraw(intaccountNo, double amount) throws -----(iii)-----;
}
```

`/* BankServer.java */`

```
public class BankServer extends -----(iv)----- implements BankInterface{
    double bal;
    double getBalance (intaccountNo){ //extract balance of given accountNo and assign to bal}
    (v) Override the deposit method of BankInterface. You can use bal as existing balance. The
        method will return the new balance.
```

(vi) Override the **withdraw** method of BankInterface. You can use bal as existing balance. If withdraw is successful, the method will return the new balance, otherwise -1 is returned.

```
public static void main(String args[]) throws Exception{
    BankServerobj=new BankServer();
    Naming.rebind("rmi://127.0.0.1:1099/netBank",obj);
}
}
```

/\* BankClient.java \*/

```
public class BankClient{
    public static void main(String []args) throws Exception{
        BankInterfacereMOTEObj;
        remoteObj=------(vii)-----;
        double newBal=remoteObj.deposit(123456,3000);
        double newBal=remoteObj.deposit(123456,6000);
        double newBal=remoteObj.deposit(123456,5000);
    }
}
```

4. Suppose you and your friends are intended to develop an online Customer Registration for shopping system. So, you start to gather customers' details in electronic format. You need to create a html page for data entry as follows:

**Customer Registration**

Name: Thuzar

Gender:  Male  Female

Address:  
Yankin

Phone: 01234567

Email: tz@gmail.com

CustomerID: CUS1  
Name: Thuzar  
Gender: Female  
Address: Yankin  
Phone: 01234567  
Email: tz@gmail.com

When the first customer data is submitted to the server, a servlet called CustomerServlet, gets the customer's details (name, gender, address, phone, email) and set customer ID to "CUS1". The servlet then shows the customer details as above figures. When the second customer data is submitted, the servlet sets the customer ID to "CUS2". The servlet shows the customer details as follows:

**Customer Registration**

Name: Marlar

Gender:  Male  Female

Address:  
Lathar

Phone: 0973111234

Email: marlar@gmail.com

CustomerID: CUS2  
Name: Marlar  
Gender: Female  
Address: Lathar  
Phone: 0973111234  
Email: marlar@gmail.com

Write the web component, CustomerServlet, to keep track of the customer ID, to get customer data and to present back the customer data. You can use Cookie or Session for session tracking if you need. Write servlet definition and servlet mapping in web.xml. **(25 marks)**

5. Write a JSP for survey form surveyForm.jsp and the user fills all information and click submit and then user input and selected fields are display in process.jsp as follows: **(10 marks)**

Name:	Mon Mon
Occupation:	Student
Age:	20
Address:	Hinthada
Your Favorite Songs :	<input type="checkbox"/> Classical <input type="checkbox"/> Hip Hop/Rap <input checked="" type="checkbox"/> Pop <input checked="" type="checkbox"/> Rock <input type="checkbox"/> Others
Your Favorite Movies :	<input checked="" type="checkbox"/> Action <input checked="" type="checkbox"/> Drama <input type="checkbox"/> Comedy <input checked="" type="checkbox"/> Horror <input type="checkbox"/> Others
	<input type="button" value="Submit"/> <input type="button" value="Reset"/>

Thank you for participating Name: Mon Mon Occupation: Student Age: 20 Address: Hinthada Your Favorite Songs <ul style="list-style-type: none"> <li>• Pop</li> <li>• Rock</li> </ul> Your Favorite Movies <ul style="list-style-type: none"> <li>• Action</li> <li>• Drama</li> <li>• Horror</li> </ul>
---

6. Create GuestBook Application using Servlet and JDBC. The first page should have text fields for accepting first name, last name ,email address and submit button as shown in following figure.

### Welcome from book store

Enter first name:

Enter last name:

Enter email address:

Upon the submit button click, user's information from the first page should be stored into GuestBook table. And then display all of the guestbook information from the database with tabular format as below. **(15 marks)**

First Name	Last Name	Email Address
Aye aye	Lwin	ayeaye@gmail.com
Hla	Hla	hla@gmail.com
Khin	Khin	khin@gmail.com

7. Create a JSP page to show the top 10 most visited cities from the following input string HongKong#Singapore#Bangokok#London#Paris#Taipei#Pattaya#Mecca#Guangzhou#Phuket. Your page should tokenize the input string using JSTL core tag <c:forTokens> as follows: **(10 marks)**

- Most Visited Cities**

  1. HongKong
  2. Singapore
  3. Bangokok
  4. London
  5. Paris
  6. Taipei
  7. Pattaya
  8. Mecca
  9. Guangzhou
  10. Phuket

\*\*\*\*\*END\*\*\*\*\*