KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
B.Sc. Engineering 3rd Year 2nd Term Examination, 2023
Department of Computer Science and Engineering
CSE 3201
Operating Systems

TIME: 3 hours FULL MARKS: 210

N.B. i) Answer **ANY THREE** questions from each section in separate scripts.
ii) Figures in the immediate right column of the questions indicate full marks.
iii) The rightmost column indicates the course outcomes.

SECTION A

(Answer **ANY THREE** questions from this section in Script A)

1.	a)	Discuss the structure (i.e., components) of the computer system. How does an Operating System (OS) manage the system? Explain using a figure.	(11)	[CO2]
	b)	Discuss goals of protection for an OS. Discuss an OS with three protection domains using a figure.	(11)	[CO1]
	c)	Explain the distributed file system with structure. Establish distinctions between stateful and stateless service.	(13)	[CO3]
2.	a)	In case of deadlock avoidance, establish a detail comparative study between the "Resource-Allocation Graph" and "Banker's algorithm".	(15)	[CO3]
	b)	Rather than "Resource-Allocation Graph" how 'Wait-for Graph' can be used for deadlock detection? Explain using a figure.	(09)	[CO2]
	c)	Explain (i) First fit, (ii) Best fit, and (iii) Worst fit storage allocation algorithms.	(11)	[CO1]
3.	a)	Discuss Multistep processing of a user program (i.e., data and instructions) over the memory.	(10)	[CO1]
	b)	Define paging. Discuss the role of page table. Sketch a paging model for a 32-byte memory with 4-byte pages.	(10)	[CO2]
	c)	Define a distributed system using a figure. Discuss techniques to avoid repeated collisions, i.e., contention.	(10)	[CO3]
	d)	How failure is detected over distributed environment? Explain.	(05)	[CO1]
4.	a)	Depict how a boot-sector computer virus can affect an OS. Also explain elaborately.	(10)	[CO2]
	b)	RSA algorithm can be used for secure data transmission as well as authenticated data sharing. How? Explain both techniques by using an example.	(15)	[CO4]
	c)	Discuss the differences between internal and external fragmentation. How does an OS manage dynamic storage-allocation problem? Explain using an example.	(10)	[CO2]

SECTION B

(Answer **ANY THREE** questions from this section in Script B)

5.	a)	What is the difference between protection and security in terms of Operating System (OS)? Explain with examples.	(10)	[CO1]
	b)	Discuss the reasons with examples, why does OS still require command interpreter?	(10)	[CO1]
	c)	Suppose, A and B are two processes. How does an OS store their information and switch their CPU access from one process to another?	(15)	[CO2]
6.	a)	Why does an OS need medium-term scheduler? Discuss with necessary diagram.	(10)	[CO2]
	b)	Write the reasons behind the Google Chrome needing more memory than other browsers. How does it manage processes?	(10)	[CO2]
	c)	Define system call. Write down the name of the system calls that are used during the time of fetching data from a file. What problems will be faced by the OS developers if there were no system calls?	(15)	[CO1]

7. a) What is aging in scheduling? Give an example for the detail understanding. (10) [CO3]
   b) How does Grand Central Dispatch method work for implicit threading? (10) [CO2]
   c) An OS uses multilevel queue scheduling approach to schedule the processes. (15) [CO3]
   Consider, the below table where queue number denotes the queue of the system. Priority of queue 1 is greater than queue 2. Queue 1 uses Round Robin (time quantum = 3) and queue 2 uses Priority Scheduling (lower the number higher the priority).

Process	Arrival Time	Burst Time	Queue Number	Priority
P_1	0	6	1	--
P_2	2	8	1	--
P_3	1	5	2	2
P_4	3	3	2	1
P_5	4	4	1	--

   Calculate the turnaround, waiting and response time with their average.

8. a) What is mutual exclusion? Discuss the Peterson's solution with its problem to achieve this. (10) [CO4]
   b) For the given reference string, you need to use the LRU algorithm to handle the page replacement cases which uses the stack implementation method. What will be the elements of stack after the operation on bold pages? (10) [CO3]

      Reference string: 4 7 0 7 1 0 **1** 2 1 **2** 7 1 2

   c) You are given an array of integers of size N. You are asked to add these numbers parallelly with M threads. Then, implement it using the pthread library. The function name must be summation which will be used to do the task. (15) [CO4]

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
B.Sc. Engineering 3rd Year 2nd Term Examination, 2023
Department of Computer Science and Engineering
CSE 3207
Applied Statistics and Queuing Theory

TIME: 3 hours FULL MARKS: 210

N.B. i) Answer **ANY THREE** questions from each section in separate scripts.
ii) Figures in the immediate right column of the questions indicate full marks.
iii) The rightmost column indicates the course outcomes.
iv) *t*-table, χ^2-table, *F*-table, *z*-table and formula chart will be provided if required.

SECTION A

(Answer **ANY THREE** questions from this section in Script A)

1. a) A company assigns software development projects to two teams, Team A and Team B, based on workload distribution: (06) [CO1]
   - Team A completes 45 out of 75 assigned projects successfully.
   - Team B completes 32 out of 40 assigned projects successfully.
   - Historically, 60% of all projects are assigned to Team A, and the rest are assigned to Team B.

   If a project is chosen at random, what is the probability that it will be successful?

   b) A computer system is using a probabilistic approach to classify emails as Spam or Not Spam based on two features: (15) [CO3]
   - F1: The presence of the keyword "Offer" in the email subject (Yes/No).
   - F2: Whether the sender's email address is on the trusted domain list (Yes/No).

   Historical data of 100 emails is summarized below:

Category	"Offer" Present (Yes)	"Offer" Absent (No)
Trusted Domain (Yes)	10 (Spam), 20 (Not Spam)	5 (Spam), 35 (Not Spam)
Trusted Domain (No)	15 (Spam), 5 (Not Spam)	5 (Spam), 5 (Not Spam)

   Calculate the probabilities of an email being Spam or Not Spam, assuming feature independence, if it contains "Offer" and is from an untrusted domain. Then calculate the same probabilities without assuming feature independence and compare the results to discuss the impact of the independence assumption.

   c) A software company has recorded the time (in minutes) taken by developers to solve a single coding problem based on their levels of experience: (14) [CO4]

Experience Level	Time Taken to Solve Problem (minutes)
Junior Developers	35, 40, 45, 70, 100, 75, 55, 50, 65, 60
Mid-Level Developers	90, 40, 30, 35, 25, 55, 50, 60, 65, 45
Senior Developers	15, 25, 20, 35, 30, 40, 55, 50, 45, 95

   i) Create a boxplot for each experience level based on the time taken to solve the problem. Show median, quartiles, IQR, and outliers.
   ii) Compare the boxplots by skewness, spread, and median. Discuss which group performs better and how experience impacts problem-solving time.

2. a) When computing sample variance, why do we divide $\sum_{i=1}^{n}(x_i - \bar{x})^2$ by $(n-1)$ instead of n (sample size) to get an unbiased estimation of the population variance? Explain. (08) [CO4]

   b) Derive the Poisson probability mass function by taking the limit of the Binomial distribution as $n \to \infty$ and $p \to 0$, while keeping $\lambda = np$ constant. Also, derive the exponential probability density function by analyzing the time between successive events in the Poisson process. Symbols have their usual meanings. (14) [CO2]

   c) Explain the Inverse Transform Method of sampling from a distribution. Using this method, sample 3 values from an Exponential distribution with rate parameter $\lambda = 0.2$. The required Uniform random numbers will be generated using the following Linear Congruential Generator equation: (13) [CO3]

$$X_{n+1} = (aX_n + c)\ mod\ m$$

   where, $a = 5$, $c = 1$, $m = 16$, and $X_0 = 2$.

3. a) Given the data points shown in following table, calculate **the regression line. Once you** have the regression line equation, calculate the **correlation coefficient *R* and the** coefficient of determination R^2 using the predicted y-values. **Interpret the values of *R*** and R^2. (14) [CO4]

x	1	2	3	4	5	6
y	4	5	7	10	12	14

b) In a performance evaluation of two algorithms, the execution times and memory usage of Algorithm A and Algorithm B are recorded. The dataset is provided below: (11) [CO3]

X (Execution Time, in seconds)	10	20	15	25	18	22	28	30	10	18
Y (Memory Usage, in MB)	15	25	20	35	30	25	40	45	10	25

i) Rank the values and compute the Spearman's rank correlation coefficient ρ for the dataset.
ii) Interpret the correlation result in terms of how well the execution time and memory usage are related.

c) An electrical firm manufactures light bulbs that have length of life that is approximately normally distributed, with mean equal to 800 hours and a standard deviation of 40 hours. Find the probability that a random sample of 16 bulbs will have an average life of less than 775 hours. (10) [CO2]

4. a) Derive the confidence interval for $\mu_1 - \mu_2$ using the means and variances of independent random samples of size n_1 and n_2 respectively, from approximately normal populations with unknown and unequal variances where μ_1 and μ_2 are the means of the above-mentioned populations. (13) [CO3]

b) A computer science department is studying the effectiveness of three different teaching methods for an introductory programming course. The final scores (out of 100) of students taught using these methods are provided below: (22) [CO2]

Teaching Method	Scores
Method A	75, 85, 92, 88, 91
Method B	72, 75, 79, 83, 77
Method C	88, 90, 85, 87, 92

i) Perform a one-way ANOVA to determine if there is a significant difference in the mean scores among the three teaching methods. Use $\alpha = 0.05$.
ii) If the ANOVA test is significant, perform pairwise t-tests to identify which pairs of teaching methods differ significantly.

SECTION B

(Answer **ANY THREE** questions from this section in Script B)

5. a) Consider two stocks. Stock 1 always sells for \$10 or \$20. If stock 1 is selling for \$10 today, there is an 80% chance that it will sell for \$10 tomorrow. In case of \$20 selling, there is a 90% chance that the price will stay same tomorrow. Stock 2 always sells for \$10, \$15 and \$25. The transition probability of stock 2 can be represented by the following matrix. (15) [CO4]

$$\begin{array}{c} \\ \$10 \\ \$15 \\ \$25 \end{array} \begin{array}{c} \begin{array}{ccc} \$10 & \$15 & \$25 \end{array} \\ \begin{bmatrix} 0.9 & 0.05 & 0.05 \\ 0.3 & 0.5 & 0.2 \\ 0.15 & 0 & 0.85 \end{bmatrix} \end{array}$$

On the average, which stock will sell in higher price? Find and interpret all mean return times.

b) Consider a board game with 4 states {*Start*, *Play*, *Bonus*, *End*}. A player starts at "*Start*" and transitions according to the probabilities given below: (20) [CO4]

$$p = \begin{bmatrix} 0.1 & 0.8 & 0.1 & 0 \\ 0 & 0.5 & 0.4 & 0.1 \\ 0 & 0.3 & 0.6 & 0.1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

i) Find the expected number of steps to reach the "*End*" state from "*Start*".
ii) Compute steady-state probabilities (if they exist).

6. a) Derive the flow balance equation for a birth-death process. Also obtain the steady-state probabilities using the equation. (14) [CO3]

b) Suppose, X is a student at Y university. X does odd jobs to supplement his income. Job requests come every 5 days on the average, but the time between requests is exponential. The time for completing a job is also exponential with mean 4 days. Answer the following questions: (10) [CO2]

i) What is the probability that X will be out of jobs?
ii) If X gets about $50 a job, what is his average monthly income?
iii) If at the end of the semester, X decides to subcontract on the outstanding jobs at $40 each. How much, on average, should he expect to earn?

c) A small post office has two open windows. Customers arrive according to a Poisson distribution at the rate of 1 every 3 minutes. However, only 80% of them seek service at the windows. The service time per customer is exponential, with a mean of 5 minutes. All arriving customers from one line and access available windows on an FCFS basis. Answer the followings: (11) [CO4]

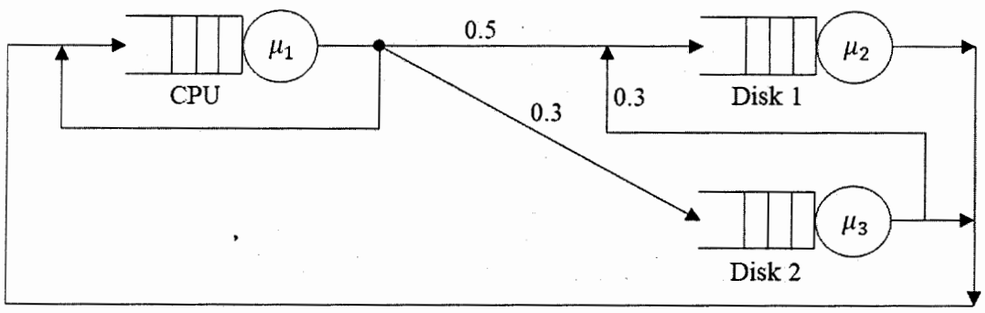
i) Would it be possible to offer reasonable service with only one window? Explain.
ii) Probability of waiting more than 3 minutes in queue.

7. a) Define the categories of Queuing Models with Kendall-Lee notation. (08) [CO1]

b) A service facility consists of one-server who can serve an average of 2 customers per hour (service times are exponential). An average of 3 customers per hour arrive at the facility (exponential inter-arrival times). The system capacity is 3 customers. Find the followings: (13) [CO2]

i) On the average, how many potential customers enter the system each hour?
ii) What is the probability that the server will be busy?

c) Consider a simple file server system shown in the following figure that consists of a CPU, and two disks (Disk 1, Disk 2). Labels of the arrows in the figure shows the routing probabilities of jobs. There are always 4 jobs in the system. The mean time to complete the CPU operation for a job is 0.05 second. The mean time to complete Disk 1 and Disk 2 operation is 0.125 and 0.2 second respectively. Determine the probability that the CPU is busy. (14) [CO3]



8. a) State Jackson's theorem of open queuing network. (06) [CO1]

b) A manufacturing unit has two machines, both of which are equally likely to fail every 20 hours on average. Repairs take an average of 4 hours (exponentially distributed). (14) [CO2]

i) Formulate this situation as a birth-death process.
ii) Compute the expected downtime for both machines together.

c) Consider two servers shown in the following table. (15) [CO3]

	Server 1	Server 2
Service and interarrival times	Exponential	Exponential
Average customer arrivals per hour	08	17
Serves per hour	20	30

After completing service at Server 1, half of the customers leave the system, and half go to Server 2. After completing service at Server 2, $^3/_4$ of the customers complete service, and $^1/_4$ return to Server 1. Answer the followings:

i) What fraction of the time is server 1 idle?
ii) Find expected number of customers at each server.
iii) Find the average time a customer spends in the system.

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
B.Sc. Engineering 3rd Year 2nd Term Examination, 2023
Department of Computer Science and Engineering
CSE 3211
Compiler Design

TIME: 3 hours FULL MARKS: 210

N.B. i) Answer **ANY THREE** questions from each section in separate scripts.
ii) Figures in the immediate right column of the questions indicate full marks.
iii) The rightmost column indicates the course outcomes.

SECTION A

(Answer **ANY THREE** questions from this section in Script A)

1. a) How can you determine a grammar is ambiguous or not? Determine for the following one: (10) [CO4]

$$A \rightarrow A(A) \mid \in$$

b) Write a flex program to count the number of statements, lines, identifiers, loops in a source program. (10) [CO4]

c) Eliminate left factoring from the following grammar. (15) [CO4]

$$A \rightarrow abB \mid aB \mid cdg \mid cdeB \mid cdfB$$

2. a) Design a transition diagram for identifying and handling nested comments in languages like C. (10) [CO1]

b) Explain memory deallocation technique by reference Counting Garbage Collector. (05) [CO3]

c) Construct a SLR Parse Table for the grammar: (20) [CO2]

$$S \rightarrow SA \mid AB \mid \in$$
$$A \rightarrow Aa \mid a$$
$$B \rightarrow bB \mid b$$

Determine whether the table contains conflicts, and justify whether they can be eliminated.

3. a) Implement three-address code such that instructions can be reordered without changing temporary values. (12) [CO3]

```
if(x<=y) && !(x==y || x=1)
then x=3
else y=5
```

b) Draw activation tree for the following program. Assume program starts from the main function: (15) [CO3]

```
void tower_of_hanoi(int n, char s, char t, char a)
    {  if(n == 1){
       printf("1 from %c to %c ", s, t);
       return;
    }
      tower_of_hanoi(n-1,  s,  a,  t);
      printf("%d from %c to %c ", n,  s,  t);
      tower_of_hanoi(n-1,  a,  t,  s);
    }
    int main(){
      tower_of_hanoi(3, 'A','B', C');
}
```

c) Show that no left recursive grammar can be LL(1) grammar. (08) [CO1]

4. a) Why do we need backpatching in three-address code? Use the backpatching technique to generate three-address code of the following program: (15) [CO5]

```
for(i=0;i<5;i++){
   while(true){
     a[i][j] = b[i]+c[j];
     if(a[i][j] > 10){
         break;
     }
   }
}
```

b) How can you choose synchronizing tokens in Panic Mode Recovery for top-down parsing? Explain with examples. (20) [CO5]
For the given grammar, parse the input "aababcac" and show how Panic Mode Recovery can handle each error.

$S \rightarrow AB$
$A \rightarrow aA|\epsilon$
$B \rightarrow bB|c$

	a	b	c	$\$$
S	$S \rightarrow AB$	$S \rightarrow AB$	$S \rightarrow AB$	
A	$A \rightarrow aA$	$A \rightarrow \epsilon$	$A \rightarrow \epsilon$	$A \rightarrow \epsilon$
B		$B \rightarrow bB$	$B \rightarrow c$	

SECTION B

(Answer **ANY THREE** questions from this section in Script B)

5. a) Consider an arithmetic expression (represented in postfix notation) contains the operators: – , *, + and / (the precedence of operator is decreasing respectively). Now construct a CFG with appropriate semantic rules. (12) [CO1]

b) Write down the pseudo-code for a predictive parser that validated the following grammar with an input string "array [1 dot dot 10] of ↑a" (13) [CO1]

```
type → simple
     |↑ id
     | array [simple]  of type
simple → integer
       | char
       | num dot dot num
```

c) Define activation record. Draw an activation tree for the following program: (10) [CO2]

```
Fibonacci (int n){
     if(n <= 1){return n;}
     return Fibonacci(n-1)+Fibonacci(n-2);
}
main()
{
       int x = Fibonacci(4);
}
```

6. a) Construct Directed Acyclic Graph (DAG) for the following statement: (10) [CO4]

$$a + a * (b - c) + (b - c) * d + d * (e + f).$$

b) Define type system and dynamic checking with proper example. (10) [CO2]

c) Consider a calculator which evaluates the following arithmetic expression: (15) [CO4]
input: $\$1 * (3 + 4) + 3$. Output: 10.

i) Write down syntax directed definition for the calculator.
ii) Draw the annotated parse free for the given input.

7. a) Define type expressions for the following code: (12) [CO1]

```
f:integer → boolean;
i:integer;  j:integer;  k:integer
   while f(i)do
     k := i,
     i := j mod i;
     j := k;
```

b) Apply optimization technique on the following three-address code: (15) [CO3]

1.	i = m-1	8.	if t_3 < v goto (5)
2.	j = n	9.	j = j-1
3.	t_1 = 3*n	10.	t_4 = 4*j
4.	v = a[t_1]	11.	t_5 = a[t_4]
5.	i = j+1	12.	if t_5> v goto (9)
6.	t_2 = 3*i	13.	t_6 = 4*i
7.	t_3 = a[t_2]	14.	t_6 = x

c) Analyze the role of target machine on the code generation phase of the compiler. (08) [CO1]

8. a) Suppose a particular machine requires even-odd register pairs for multiplication and division. The even register contains the operand (multiplicand / dividend). The instruction has the following format: (10) [CO3]

```
OP source, destination
```

Now consider the expression $a = b + c * d/e$ and generate optimal machine-code sequences.

b) Calculate the cost of the following instructions: (15) [CO3]

i)			ii)			iii)		
MOV	B, R_0		MOV	B, A		MOV	*R_1, *R_2	
ADD	A, R_0		ADD	C, A		ADD	*R_2, R_0	
MOV	R_0, C		SUB	A, B				

c) Consider the following code segment: (10) [CO3]

```
/* code for s */
action 1
call p
action 2
halt
```

```
/* code for P */
action 3
call p
return
```

The code of the above procedures starts at address: 150 and 250 respectively. The stack starts at 600. Each instruction takes 5 words. Assume the size of each procedure. Show the stack allocation when the target machine in word addressable.

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
B.Sc. Engineering 3rd Year 2nd Term Examination, 2023
Department of Computer Science and Engineering
CSE 3217
Mobile Computing

TIME: 3 hours FULL MARKS: 210

N.B. i) Answer **ANY THREE** questions from each section in separate scripts.
ii) Figures in the immediate right column of the questions indicate full marks.
iii) The rightmost column indicates the course outcomes.

SECTION A

(Answer **ANY THREE** questions from this section in Script A)

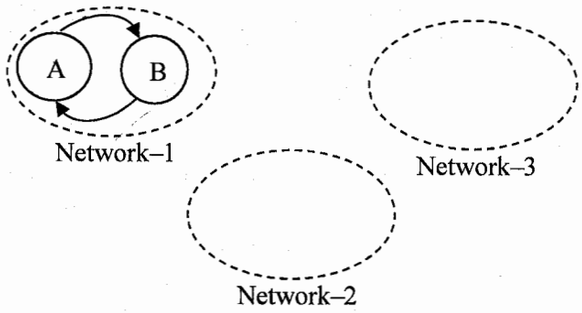
1.	a)	What is mobile computing? What are the other names of mobile computing?	(07)	[CO1]
	b)	How does a smart phone interact with environment and users using different sensors?	(14)	[CO3]
	c)	Draw the hardware diagram of a smartphone. Describe the components of application processor in details.	(14)	[CO1]
2.	a)	"Android OS is a combination of several layers" – justify the statement.	(14)	[CO3]
	b)	"Augmented Reality is changing healthcare for the better" – justify the statement with necessary explanation.	(10)	[CO3]
	c)	What are ARM processors? Explain the seven operating modes of ARM processor.	(11)	[CO2]
3.	a)	What is Virtual Reality (VR)? What are the gaps in VR research in cases of attack and defense? Based on this propose an amazing future work idea.	(15)	[CO4]
	b)	What is big.LITTLE architecture? Explain details with few practical example configurations.	(10)	[CO1]
	c)	Differentiate between Dalvik Virtual Machine and Android Runtime? Based on their pros and cons, which one will be suitable in which scenario?	(10)	[CO3]
4.	a)	"The kernel provides an interface between the hardware and software" – explain.	(10)	[CO2]
	b)	What are the current challenges of mobile computing? What is the solution? Please explain with practical example scenario.	(10)	[CO3]
	c)	What is application framework in Android OS? Develop a Java class that provides a few services that application framework provides.	(15)	[CO4]

SECTION B

(Answer **ANY THREE** questions from this section in Script B)

5.	a)	For a hybrid network with both stationary and mobile wireless sensor nodes, design a protocol to achieve optimal localization accuracy. (Hint: you can use and combine existing protocols).	(12)	[CO3]
	b)	A mobile node moving in a high speed wants to maintain smooth communication with cell towers. Considering the network follows CDMA protocol, briefly explain this process of ensuring smooth communication.	(13)	[CO1]
	c)	As an engineer building data centers, what kind of ICT standards would you choose, and why?	(10)	[CO3]
6.	a)	"At a shared environment, the security strength of the cloud largely depends on the virtualization configuration" – justify the statement.	(12)	[CO2]
	b)	Explain the DFWMAC-PCF protocol with necessary explanation and diagram(s).	(13)	[CO1]
	c)	"AdAMAC significantly reduces the starvation issue observed in the ATMA protocol" – is this statement valid? Justify your reasoning.	(10)	[CO2]
7.	a)	Briefly describe different types of waiting time of IEEE 802.11.	(10)	[CO1]
	b)	Briefly describe how MACA solves hidden terminal problem and exposed terminal problem.	(10)	[CO3]
	c)	What is meant by 'unfairness' in WSN? How MACAW solve unfairness of a wireless network?	(15)	[CO4]

8. a) In the network shown in the following figure, originally node A belongs to Network-2 and node B belongs to Network-3. In the above scenario, describe the data packet transmission process from node A to B and then B to A with detailed explanation and necessary diagrams(s). (15) [CO3]



b) Illustrate the difference between POWER NAP, sleep and active low power mode mechanism. (10) [CO2]

c) Define contention window size. Write down the difference between B-MAC and X-MAC. (10) [CO1]

KHULNA UNIVERSITY OF ENGINEERING & TECHNOLOGY
B.Sc. Engineering 3rd Year 2nd Term Examination, 2023
Department of Computer Science and Engineering
HUM 3227
Professional Ethics and Moral Thoughts

TIME: 3 hours FULL MARKS: 210

N.B. i) Answer **ANY THREE** questions from each section in separate scripts.
ii) Figures in the immediate right column of the questions indicate full marks.

SECTION A

(Answer **ANY THREE** questions from this section in Script A)

1. a) Define Ethics. (05)
   b) Explain the principles of Ethics for the engineers. (10)
   c) Comment on the statement, "the highest good is beyond good and evil". (10)
   d) "There is no absolution moral truth" – discuss the statement in the light of relativism. (10)

2. a) Is man purely intellectual? Does he have both feelings and intelligence? Explain it. (10)
   b) Discuss briefly the roles of code of ethics. (10)
   c) What is relativism? (05)
   d) Distinguish the advantages and disadvantages of relativism in our society. (10)

3. a) How does intuition come from? (05)
   b) Is there any usefulness of intuitionism? Explain it with example. (10)
   c) Describe the IEEE fundamental codes of ethics. (10)
   d) Classify the different types of egoism. (10)

4. a) Define a profession. (05)
   b) Where and how professional ethics fit in engineering? (10)
   c) Why is ethics necessary for psychological basis? Relate their relationship. (10)
   d) Discuss the four sanctions of utilitarianism. (10)

SECTION B

(Answer **ANY THREE** questions from this section in Script B)

5. a) What is morality? (05)
   b) Separate the forms of morality. (10)
   c) What are the purposes of morality? (10)
   d) Describe the relationship between morality and religion. (10)

6. a) Identify the similarities between ethics and morality. (10)
   b) Discuss the family's contribution to children's moral development. (10)
   c) Do you think morality is conscience? Explain. (05)
   d) Express the moral standing of patriotism. (10)

7. a) Discuss Freud's view about moral development. (10)
   b) Interpret the main observation of Bandura's learning theory. (10)
   c) According to Turiel what are the domain of knowledge for moral development? (10)
   d) State the main tenets of Piaget's theory of moral development. (05)

8. a) Describe the common core moral virtues for work place. (10)
   b) Mention some requirements to make moral judgement in the work place. (10)
   c) How to apply skinners reinforcement theory to workplace. (10)
   d) What are the universal ethical principle orientations of cognitive development approach? (05)