B. Sc (HON'S) IN CSE, THIRD YEAR, FIFTH SEMESTER EXAMINATION, 2020

PERIPHERAL AND INTERFACING

[According to the New Syllabus]

Subject Code : CSE-530201

Time—3 hours

Full marks—80

*[N.B. The figures in the right margin indicate full marks. Answer any **four** questions.]*

Marks

1. (a) Describe the basic peripheral and interfacing technique with necessary diagram. — 5

   (b) Write down the differences between synchronous and asynchronous transmission. — 5

   (c) Explain RS-232C serial interfacing technique with proper diagram. — 5

   (d) Describe the data transmission modes based on direction. — 5

2. (a) What is DMA? Why does the DMA generally have priority over the CPU in the case of accessing memory? — 4

   (b) Draw the block diagram showing how a DMA controller operates in a microcomputer system. — 6

   (c) Differentiate between LCD and LED. — 4

   (d) Explain the full step operation of a stepper motor. How it is interfaced to a microprocessor? — 6

3. (a) What is a scanner? Explain various types of scanners. — 6

   (b) Write down the difference between OMR and OCR. — 4

   (c) What is interrupt? Explain different types of interrupt. — 5

   (d) Define digitizer. Describe the operation of digitizer. — 5

4. (a) Describe the basic components of CRT. — 6

   (b) List out the benefits of LCD over CRT display. — 4

   (c) With a neat diagram explain the working of magnetic hard disk controller. — 6

   (d) What are the differences between active and passive matrix? — 4

5. (a) Describe the operation principle of Laser Printer. — 6

   (b) Explain the major components of 8251 USART. — 4

   (c) What are the advantages of impact printer over non-impact printers? — 6

   (d) What is the concept of NULL modem? — 4

6. Write short notes on any **four** of the following : — 5×4=20

   (a) GPIB bus system

   (b) DTE and DCE

   (c) PCI bus

   (d) Raster scan

   (e) HPIB

   (f) Plotter.

B.Sc (HON'S) IN CSE, THIRD YEAR, FIFTH SEMESTER EXAMINATION, 2020

DATA AND TELECOMMUNICATION

[According to the New Syllabus]

Subject Code : CSE-530203

Time—3 hours

Full marks—80

[N.B. The figures in the right margin indicate full marks. Answer any four questions.]

Marks

1. (a) What is meant by data communication? Explain its characteristics. 5
   (b) State the difference between TCP/IP with OSI reference model. 5
   (c) Describe the transmission modes in computer networks with diagram. 5
   (d) Describe the layer of OSI reference model. 5

2. (a) Write down the physical description, application and transmission characteristics of optical fiber. 6
   (b) What is noise? Describe different types of noise. 1+3=4
   (c) What is data transmission? Explain different types of data transmission. 1+5=6
   (d) Define unguided media. Write down the differences between Radio Waves and Microwaves. 1+3=4

3. (a) Briefly explain ASK, FSK and PSK techniques with principal advantages and disadvantages. 6
   (b) What is bit rate and baud rate? A signal is carrying four bits in each signal element. If 1000 signal elements are sent per second, find the bit rate and baud rate? 2+2=4
   (c) Describe data encoding and modulation techniques with figures. 5
   (d) Explain Pulse Code Modulation (PCM) technique with diagram. 5

4. (a) What is CRC? Explain Module 2 Arithmetic and Polynomials with example. 1+5=6
   (b) What is bit stuffing? Suppose the data is 11111111111101111101111110. What will be the data pattern after applying bit stuffing in HDLC? 1+4=5
   (c) Write down the differences between stop and wait protocol and sliding window protocol. 4
   (d) Describe null modem with figure. 5

5. (a) What is multiplexing? Describe how FDM combines multiple signals into one. 1+5=6
   (b) Compare between the features of FDM and TDM. 4
   (c) Explain Time Division Multiplexing (TDM) technique. 4
   (d) A multiplexer combines four 100Kbps channel using a time slot at 2 bits. Show the output with four arbitrary inputs : 6
       (i) What is frame rate?
       (ii) What is frame duration?
       (iii) What is bit rate?
       (iv) What is bit duration?

6. Write short notes (any **four**) : 5×4=20
   (a) VSAT (b) SONET (c) ATM Network
   (d) X·25 Protocol (e) ARQ (f) RS232.

B.Sc (HON'S) IN CSE, THIRD YEAR, FIFTH SEMESTER EXAMINATION, 2020

OPERATING SYSTEM

[According to the New Syllabus]

Subject Code : CSE-530205

Time—3 hours

Full marks—80

[N.B. The figures in the right margin indicate full marks. Answer any four questions.]

Marks

1. (a) Describe operating system. Write down the main components of an operating system. — 1+4=5

   (b) Briefly describe about the symmetric and asymmetric multi-processing. — 5

   (c) Define system call. Mention major categories of system calls with examples. — 5

   (d) What are the operations of different process states? Explain with diagram. — 5

2. (a) Define logical address, physical address and virtual address. — 4

   (b) Why are segmentation and paging sometimes combined into one scheme? — 6

   (c) Discuss about client server communication via Remote Procedure Calls (RPC). — 5

   (d) Mention important features of command line interface (CLI) and graphical user interface (GUI). — 5

3. (a) Describe CPU scheduling criteria. — 4

   (b) Distinguish between preemptive and non-preemptive CPU scheduling. — 4

   (c) Consider the set of 5 processes whose arrival times and burst times are given below : — 12

Process ID	Arrival Time	Burst Time
P_1	3	1
P_2	1	4
P_3	4	2
P_4	0	6
P_5	2	3

Calculate the average waiting time and turn around times for these processes with SJF, preemptive SJF and RR scheduling. (Quantum time = 1 ms)

[Please turn over

4. (a) What do you mean by deadlock? Write down at least two real examples of deadlock.   3

(b) Briefly explain four necessary conditions for deadlock.   5

(c) What is infinite blocking? How can overcome from this type of situation?   4

(d) Consider the following snapshot of a system :   8

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P_0 :	0	1	0	7	5	3	3	3	2
P_1 :	2	0	0	3	2	2			
P_2 :	3	0	2	9	0	2			
P_3 :	2	1	1	2	2	2			
P_4 :	0	0	2	4	3	3			

(i) Determine the need matrix.

(ii) Is the system in safe state?

(iii) If a request from process P_4 arrives for (0, 1, 1) can be request be granted immediately?

5. (a) What do you mean by virtual memory? Explain the demand paging system.   6

(b) Consider the following page reference string :   9

     1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6.

How many page faults would occur for the following replacement algorithms, assuming four frames are available?

(i) FIFO replacement

(ii) Optimal replacement

(iii) LRU replacement.

(c) When do page fault occur? Describe the actions taken by the operating system.   5

6. (a) What are the different file allocation methods? Briefly explain.   6

(b) Define file. What are the attributes of a file?   5

(c) Explain different types of file access method.   5

(d) Describe the basic directory operations.   4

2022.02.2

Scanned with CamScanner

$fc - +v(x)$

B.Sc. (HON'S.) IN CSE, THIRD YEAR, FIFTH SEMESTER EXAMINATION, 2020
ECONOMICS
[According to the New Syllabus]
Subject Code : CSE-530207
Time—3 hours
Full marks—80

*[N.B. The figures in the right margin indicate full marks. Answer any **four** questions.]*

Marks

1. (a) Define Economics. Discuss the scope of economics.   6
   (b) Differentiate between microeconomics and macroeconomics.   5
   (c) What are the factors of production?   5
   (d) What is meant by budget constraint?   4

2. (a) Explain the law of diminishing marginal utility with exceptions.   6
   (b) "No cost is fixed in the long run"—Explain it.   4
   (c) Define isoquants and state its properties.   5
   (d) Define total product, average product and marginal product.   5

3. (a) The following are the demand and supply functions :   15
   $Q_d = 60 - 3P$, $Q_s = 20 + P$

   (i) Determine equilibrium price and quantity in a perfectly competitive market mathematically and graphically.
   (ii) Determine E_d and E_s from the above equation.
   (iii) What will be the effect on the market equilibrium if the government imposes a tax of Tk. 4 on each unit of the output?
   (iv) What will be the effect on the market equilibrium if the government gives a subsidy of Tk. 2 on each unit of the output?
   (b) What is short run average cost? Why is average cost curve generally 'U' shaped?   5

4. (a) Define the market. Explain the different forms of market.   6
   (b) What is market equilibrium? Explain the market equilibrium with the help of demand and supply curve.   7
   (c) What do you mean by returns to scale? Explain and graphically show the points of optimum production of constant, increasing and decreasing return to scale.   7

5. (a) Explain why the marginal cost curve cuts average cost curve and variable cost curve at their minimum values.   6
   (b) What is production function?   3
   (c) How price and output are determined in monopolistic competition?   6
   (d) What are the determinants of price elasticity of demand?   5

6. (a) What do you mean by marginal rate of substitution?   4
   (b) Explain the teams $E_d = 1$, $E_d > 1$ and $E_d < 1$.   4
   (c) What is budget line? Draw a budget line from an imaginary budget equation.   5
   (d) Define demand. Draw an individual demand curve from the law of demand.   7

২৬৩এস্র