DEPARTMENT OF INFORMATION TECHNOLOGY
BE IT III YEAR MIDTERM-II 2022
COMPUTER NETWORKS (IT38001)

Time: 1:00 Hours **Max Marks: 20**

		Marks	CO	BL
Q.1	Consider the link between R2 (Router 2) and AN1 (Access Network 1) in Figure 1. It has a length equal to d = 3 Km, and its propagation speed is equal to $4*10^8$ m/s. R2 sends packets of size L = 15000 bits to AN1, and they are transmitted at a rate R = 400 Mbps.	4	CO1	BL3

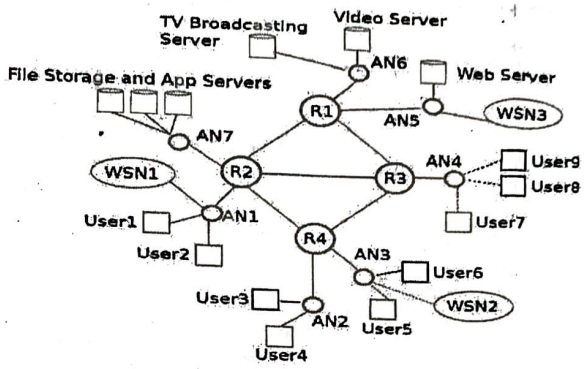

Figure 1: Basic Network

1. Calculate the propagation delay, Dp that suffers a packet between R2 and AN1.
2. Calculate the transmission delay, Ds, for a packet transmitted by R2.
3. Calculate the time elapsed since a single packet starts to be transmitted at R2 until it is completely received at AN1.
4. If the processing delay at AN1 is negligible, i.e., Dc = 0, and R2 transmits packets continuously, i.e., without any delay between two consecutive packets. How many packets are transmitted in 10 seconds?

Q.2	What are the number of cable links required for n devices connected in mesh, ring, bus and star topology? Explain and prove with example.	4	CO1	BL2
Q.3	A 2 KM long broadcast LAN has 10^7 BPS bandwidth and uses CSMA/CD. This signal travel along the wire at $2*10^8$m/sec . What is the minimum packet size that can be used in this network?	4	CO2	BL3
Q.4	Explain structure of IPV4 frame header.	4	CO3	BL2
Q.5	Host A want to send 10 frames to Host B, the host agreed to go with Go Back-4. How many numbers of frames are transmitted by Host A if every 6th frames that is transmitted by Host A is either corrupted of lost.	4	CO2	BL4

SHRI G.S. INSTITUTE OF TECHNOLOGY AND SCIENCE, INDORE (M.P.)
MID TERM II

TIME: 1 HR. **IT38003: OPERATING SYSTEM**
MAX. MARKS: 20

S.NO.	Questions	Marks	CO	BL	PI
Q.1	Explain any two directory structures.	(02)	CO2	2	1.4.1
Q.2	Briefly explain Free Space Management.	(02)	CO2	2	1.4.1
Q.3	Use Optimal Page Replacement to find hit ratio, consider the page references 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 3 with 4 page frame. Also find number of page faults.	(04)	CO5	3	2.3.1
Q.4	Suppose the order of requests are 70, 140, 50, 125, 30, 25, 160 and the initial position of the Read-Write head is 60. And it is given that the disk arm should move towards the larger value. Find the disk movement using C-LOOK algorithm.	(04)	CO5	3	2.3.1
Q.5	A demand paging system, with page table held in registers, takes 5 ms to service a page fault if an empty page is available, or if the page to be replaced is not dirty. It takes 15 ms if the replaced page is dirty. Memory access time is 1ms. Assume we want an effective access time of 2ms and that the page to be replaced is dirty 60% of the time. What is the approximate maximum acceptable page fault rate to meet this access time requirement?	(04)	CO4	5	2.3.1
Q.6	a) A computer system has a 4 k word cache organized in a block-set-associative manner, with 4 blocks per set, 64 words per block. The number of bits in the SET and WORD fields of the main memory address format is required?	(02)	CO4	5	2.3.1
Q.6	b) What's the difference between swapping and paging?	(02)		2	1.4.1

Department of Information Technology
Mid Sem. Test – II (Jul-Nov 2022)
Theory of Computation (IT 38002)

Time: 1Hour
Note: ALL questions are compulsory.

Max Marks: 20

		Marks	CO	BL	PI
Q1	Define the following terms: Refinement of partition, Regular Expression, right linear and left linear grammar	03	CO1	2	1.3.1
Q2	Minimize the given DFA.	04	CO5	3	1.4.1
Q3	Construct the regular expression corresponding to the following finite automata using Arden's theorem:	04	CO5	3	1.4.1
Q4	Construct a Moore machine for input (0+1+2)* which prints the residue modulo 3 of the input treated as a ternary (base 3 with digits 0, 1, 2) number.	05	CO4	4	1.4.1
Q5	Construct the DFA equivalent to given NFA:	04	CO3	31	1.4.1

	0	1
→ A	A	A, B
B	-	C
C	C	C, D
(D)	D	D

SHRI G.S. INSTITUTE OF TECHNOLOGY & SCIENCE, INDORE
DEPARTMENT OF INFORMATION TECHNOLOGY
BE IT III YEAR MIDTERM-II 2022
Artificial Intelligence (IT38005)

Time: 1:00 Hours **Max Marks: 20**

		Marks	CO	BL
Que(1)	Define tautology and contradiction. What do you call a compound proposition that is neither a tautology nor a contradiction?	**2**	**CO3**	**BL2**
Que(2)	Given three propositions, and , prove the distributive and associative laws using truth table.	**4**	**CO1**	**BL1**
Que(3)	List out the difference between discrete and continuous environments.	**4**	**CO1**	**BL3**
Que(4)	What is **Alpha Beta** Pruning and also write the time complexity of given algorithm?	**5**	**CO3**	**BL2**
Que(5)	Evaluate the root node value using **minimax** algorithm:	**5**	**CO2**	**BL4**