PAPER ID-420529

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VI) THEORY EXAMINATION 2021-22
MICROCONTROLLER FOR EMBEDDED SYSTEM DESIGN

Time: 3 Hours ***Total Marks: 100***

Notes:

- *Attempt all Sections and Assume any missing data.*
- *Appropriate marks are allotted to each question, answer accordingly.*

SECTION-A	Attempt **All** of the following Questions in brief	Marks**(10X2=20)**	**CO**
Q1(a)	Write two differences between OSI and TCP/IP Protocol suite.		1
Q1(b)	Why do we use Layered protocol? Give at least two reasons.		1
Q1(c)	What is the difference between Guided Vs Unguided Media?		2
Q1(d)	What is the use of bit stuffing in Data Link Layer?		2
Q1(e)	A pure ALOHA network transmits 200-bit frames on a shared channel of 200 kbps. What is the requirement to make this frame collision-free?		3
Q1(f)	Prove that a receiving station can get the data sent by a specific sender if it multiplies the entire data on the channel by the sender's chip code and then divides it by the number of stations.		3
Q1(g)	How is the next hop address returned by the routing algorithm used?		4
Q1(h)	Consider a router with three interfaces. Suppose all 3 interfaces use class C addresses. Will the IP address of the three interfaces necessarily have the same first 8-bits? Why?		4
Q1(i)	Which protocol is used to receive mail messages?		5
Q1(j)	What is the purpose of FTP?		5

SECTION-B	Attempt **ANY THREE** of the following Questions	Marks**(3X10=30)**	**CO**
Q2(a)	(i) What are the responsibilities of the network layer in the internet model? (ii) For n devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology?		1
Q2(b)	(i) Discuss the concept of redundancy in error detection and correction. (ii) Assume that, in a Stop-and Wait ARQ system, the bandwidth of the line is 1 Mbps, and 1 bit take 20 ms to make around trip. What is the bandwidth-delay product? If the system data frames are 1000 bits in length, what is the utilization percentage of the link?		2
Q2(c)	How do we say collision detection in analog process? Why do we prefer CSMA over ALOHA?		3
Q2(d)	What is the difference between network layer delivery and transport layer delivery? Explain the congestion control techniques.		4
Q2(e)	Give a detailed description on various design goals of Network Security.		5

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	**CO**
Q3(a)	What is line coding technique? Explain and compare performance of different line coding techniques.		1
Q3(b)	What are the roles of Protocol in general and describe its various elements? Write two principles of Protocol Layering.		1

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	**CO**
Q4(a)	Explain sliding window protocol using go back n.		2
Q4(b)	Define and explain the various frame type in HDLC. Design a three stage, 200X200 switch (N=200) with k=4 and n=20.		2

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SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	CO
Q5(a)	Define MAC layer of data link layer. Discuss CSMA and CSMA/CA random access method.		3
Q5(b)	Enlist various IEEE standards for LAN and explain and IEEE standards 802 for it in details.		3

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	CO
Q6(a)	Give a detailed description on TCP Segment Header and TCP Connection Management.		4
Q6(b)	What is address resolution? Explain the contents of first byte on IP header if the IP protocol is IPv4 & header has eight bytes.		4

SECTION-C	Attempt **ANY ONE** following Question	Marks **(1X10=10)**	CO
Q7(a)	Discuss the various design issue involved in ATM technology and also explain the different layers of ATM.		5
Q7(b)	Explain uses of HTTP headers for client and server negotiation.		5