Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

II SEMESTER M.TECH. (COMPUTER NETWORKING AND ENGINEERING)

END SEMESTER EXAMINATIONS, APR/MAY 2017

SUBJECT: ADVANCED COMMUNICATION NETWORK TECHNOLOGIES [ICT 5202]

REVISED CREDIT SYSTEM
(22/04/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer ALL the questions.
- Missing data if any, may be suitably assumed.

1A. Justify the need for Basic Encoding Rules. Consider a table having 3 rows and 2 columns with each row having variable declaration (objects) of 2 different data types. Show how these objects are encoded using Basic Encoding Rules. The codes for the data types are given in Table Q.1A 5

Table Q.1A

Data Type	*Class*	*Format*	*Number*	*Tag (Binary)*	*Tag (Hex)*
INTEGER	00	0	00010	**00000010**	**02**
OCTET STRING	00	0	00100	**00000100**	**04**
OBJECT IDENTIFIER	00	0	00110	**00000110**	**06**
NULL	00	0	00101	**00000101**	**05**
Sequence, sequence of	00	1	10000	**00110000**	**30**
IPAddress	01	0	00000	**01000000**	**40**
Counter	01	0	00001	**01000001**	**41**
Gauge	01	0	00010	**01000010**	**42**
TimeTicks	01	0	00011	**01000011**	**43**
Opaque	01	0	00100	**01000100**	**44**

1B. Write the sequence of steps followed by the manager for request flow and by the agent for response flow. Compare the merits and demerits of SNMPv1 and SNMPv2. 3

1C. All the GPS satellites transmit the data using the same carrier frequency (1575.42Mhz). One GPS receiver can simultaneously receive signals from Multiple satellites. Will there be interference? If not why? 2

2A. Describe the need for WDM. What is the significance of Physical and logical topology in the context of optical networks such as SONET? How does the ADD-DROP multiplexer improve the performance of the SONET? 5

2B. Why is PNNI routing important in ATM? In what way it is different from internet routing algorithms? What is the significance of DTL in PNNI routing? 3

2C. Discuss the purpose of RSVP and MPLS in internet. 2

3A. What is the role of Adaptation Layer in ATM networks? With necessary schematic explain the process of ATM adaptation layer 1 (AAL1). Bring out the similarity and clear distinction between ATM signaling and ISDN network signaling. 5

3B. Given an optical fiber system supporting 100nm window in the 1550 band. Calculate the bandwidth supported by the system. How many telephone calls can be carried by the system? 3

3C. Figure Q.3C shows the typical bandwidth utilization pattern of various service categories supported in ATM. What is your observation in this? 2

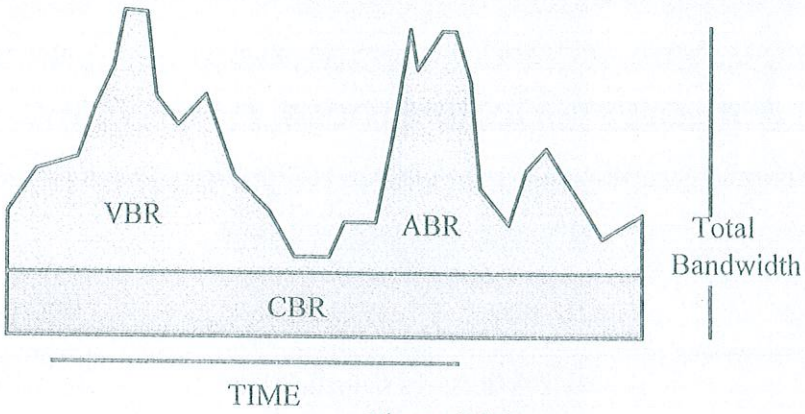

Figure Q.3C

4A. Show with examples that the multi-stage modular switch fabric design is efficient and cost effective when compared to single stage crossbar design. 5

4B. Compare the features of Benes network with that of distributed buffer switch. With necessary sketches, discuss the self-routing feature of distributed buffer switch. Compute the total number of cross points implemented in 64x64 Benes switch fabric. 3

4C. The VANET Communication uses IEEE802.11p. The physical layer technology is OFDM in IEEE802.11p. The defined slot time and SIFS are 12 microseconds and 16 microseconds respectively. Compute the DIFS and PIFS. 2

5A. Assume a sample network of 14 wireless nodes. For the sample network, show the procedure to find a path to route a packet from source to destination using OLSR and DSR protocols. 5

5B. Show with necessary sketches that hidden terminal and exposed terminal problem affects the performance of the Wireless LAN. 3
The wireless networks do not perform well with CSMA/CD. Why? Explain the working of MACA protocol.

5C. Traffic descriptors, QOS, Connection Admission control, and policing are additional features in ATM. Discuss each of these features and its benefits. 2