Paper Code: IC1842
Roll No: .....

M.Sc. (INFORMATICS) / IV Semester 2018
Paper IT 42 – TELECOMMUNICATION AND NETWORK MANAGEMENT

Time: 3 Hrs. **Max. Marks: 75**

(Write your Roll No. on the top immediately on receipt of this question paper)

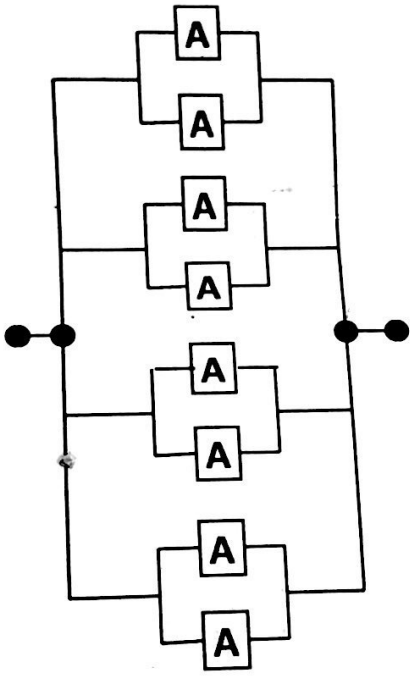
Attempt 5 Questions in ALL.
Question 1 is compulsory

1) Each question-part carries 3 marks:

a) Define the following terms:
   i. SNMP MIB View
   ii. Structure of Management Information
   iii. Unix/Windows Socket

b) Explain how ICMP can be used for Network Management in small networks?

c) Calculate the availability of following system:



d) Which are the ports reserved for SNMP? Mention their corresponding usage?

e) Explain the concept and goals of RMON protocol?

2)

a) Discuss in detail the architecture and components of a traditional SNMPv3 Entity? **(7)**

b) Discuss in detail the Network Management Software Architecture? **(6)**

c) What is the significance of MIB view defining community name as `public`? **(2)**

3)

a) Design a SNMP-driven Network Management System for UDSC (University of Delhi South Campus)? (7)

b) Explain the PDU formats for all the SNMPv1 messages? (5)

c) Describe the internal MIB structure with the help of an example. (3)

4)

a) Explain in detail the Message Processing Subsystem primitives for SNMPv3? (7)

b) Define the following SNMP Application-wide data types: (5)
   i. *TimeTicks*
   ii. *Counter64*
   iii. *Gauge32*
   iv. *Opaque*
   v. *IPAddress*

c) XYZ Corporation has been assigned the Class B network address 165.87.0.0. XYZ needs to divide the network into eight subnets. What subnet mask should be applied to the network to provide the most hosts per subnet? (3)

5)

a) Discuss the basic actions performed by SNMP entity during transmission and receipt of SNMP message? (3+3)

b) Differentiate between the following ASN structured data types: (4)
   i. *SEQUENCE and SEQUENCE-OF*
   ii. *SET and SET-OF*

c) What are the different types of tests a Fault Monitoring system must support to ensure good network management? (3)

d) Define the different possibilities/options for MAX-ACCESS clause in SNMPv2 SMI? (2)

6)

a) Explain the significance of the following APIs in network programming:
   i. *inet_pton (...)*
   ii. *sendto (...)*
   iii. *htonl (...)*
   iv. *shutdown (...)* (4)

b) Mention and discuss the different design areas for network monitoring? Also discuss the different Network monitoring configurations? (3+3)

c) Discuss the enhancements done to MIB for SNMPv3? (3)

d) How can a SNMP manager get an agent to perform an action in SNMPv1? (2)