

Indian Institute of Technology, Kharagpur

Class Test - 2; Autumn Semester 2018-19

Date of Examination: 26-10-2018 Session: AN (6.30-7.30 pm) Duration: 1 hr
Subject No.: IT30037 Subject: INTRODUCTION TO INTERNET
Department/Center/School: Computer Science and Engineering Marks = 25

Name: _____ Roll No: _____

1. The following IPv4 packet has been generated from a source host with the following assumptions:
- (i) The fields or bits that were not used or reserved are denoted by 0.
 - (ii) The 8-bit field (2nd byte of IP header) is interpreted as service type.
 - (iii) Time to live field is interpreted as total number of hops.
 - (iv) Source and destination IP addresses are considered to be class-full or class-based addressing.
 - (v) The first 20 bytes of IP header is shown in Figure as 32-bit words (one word per row).

01001001	11001000	01001110	01000100
01000101	11010001	00101001	11000100
00110100	00010001	11001110	00110011
00110100	10001010	11000101	11100110
11010011	10111101	00100110	11000110

4-9-6-T-20036
17873-0-0-1-2500
52-17-CE33
52.138.197.230
211.189.38.198

DETERMINE THE FOLLOWING:

- (a) Source IP address: (4M)
 - i. IP address in dotted decimal notation: 52.138.197.230
 - ii. Class of IP address: A
 - iii. Network mask in dotted decimal notation: 255.0.0.0
 - iv. Network address in binary format 00110100 00000000 00000000 00000000

01001001	11001000	01001110	01000100
01000101	11010001	00101001	11000100
00110100	00010001	11001110	00110011
00110100	10001010	11000101	11100110
11010011	10111101	00100110	11000110

(b) Destination IP address: **(4M)**

i. IP address in dotted decimal notation: 211.189.38.198

ii. Class of IP address: C

iii. Network mask in slash-n () notation: \24

iv. Network address in hexa decimal format D3.00.00.00

(6M)

(c) Length of data (in bytes): 20000

(d) Length of optional headers (in bytes): 16

(e) IP Version number (in decimal): 4

(f) Precedence (in decimal): 6

(g) Length of Header (in bytes): 36

(h) Type of service: Maximize Throughput

01001001	11001000	01001110	01000100
01000101	11010001	00101001	11000100
00110100	00010001	11001110	00110011
00110100	10001010	11000101	11100110
11010011	10111101	00100110	11000110

(1+1+1+4=7M)

- (i) Total number of hops (in decimal): 52
- (j) Protocol value (in decimal): 17
- (k) Header checksum mentioned in header (in hexa decimal): CE33
- (l) Is the header checksum given is correct? If it is wrong, compute the correct checksum:
 NO, Correct Checksum: 1100111101010111 (Hex: CF57)

4 9 C 8

4 E 4 4

4 5 D 1

2 9 C 4

3 4 1 1

0 0 0 0

3 4 8 A

C 5 E 6

D 3 B D

2 6 C 6

3 0 A 5

0 0 0 3

3 0 A 8

Complement of 30A8 = CF57 (Hex); (1100111101010111)

01001001	11001000	01001110	01000100
01000101	11010001	00101001	11000100
00110100	00010001	11001110	00110011
00110100	10001010	11000101	11100110
11010011	10111101	00100110	11000110

(m) Fragmentation: **(4M)**

- i. Identification Number (in decimal): 17873
- ii. Flag D: 0
- iii. Flag M: 1
- iv. Fragmentation offset (in bytes): 20000