



EXAMINATIONS 2011 / 2012
ARHOLIADAU 2011 / 2012

Semester 2

FACULTY OF: APPLIED DESIGN AND ENGINEERING
SCHOOL OF APPLIED COMPUTING

NAME OF COURSE/PROGRAMME: B.Sc. (Hons) Computer Networks

YEAR OR LEVEL: Level 6

NAME OF MODULE/UNIT/EXAM PAPER: Wide Area Networks

MODULE NO: M3X8649

DATE OF EXAMINATION: 21st May 2012

EXAMINATION TIMES:

START TIME: 2:00pm

FINISH TIME: 4:00pm

TIME ALLOWED: 2 hours

INSTRUCTIONS TO CANDIDATES:

Answer three out of the four questions. Each question carries equal marks.

Candidates are not permitted to bring calculators, dictionaries; text books/case studies or any other reference materials into the exam room.

QUESTION ONE

(a) Describe Microfilter and Splitter.

(5 marks)

(b) With reference to the figure 1, design a network for the SMU. The Mount Pleasant campus is the main site which is connected to the Internet. Townhill, Dynevor and Alexandra Road are connected to Internet via Mount Pleasant. Choose appropriate WAN technology to support this setup and provide fast, reliable and secured connection. The choices of WAN technologies are not limited. Upon the completion of the design, evaluate your system, e.g. why you have chosen such a structure, benefits and limitations, etc.

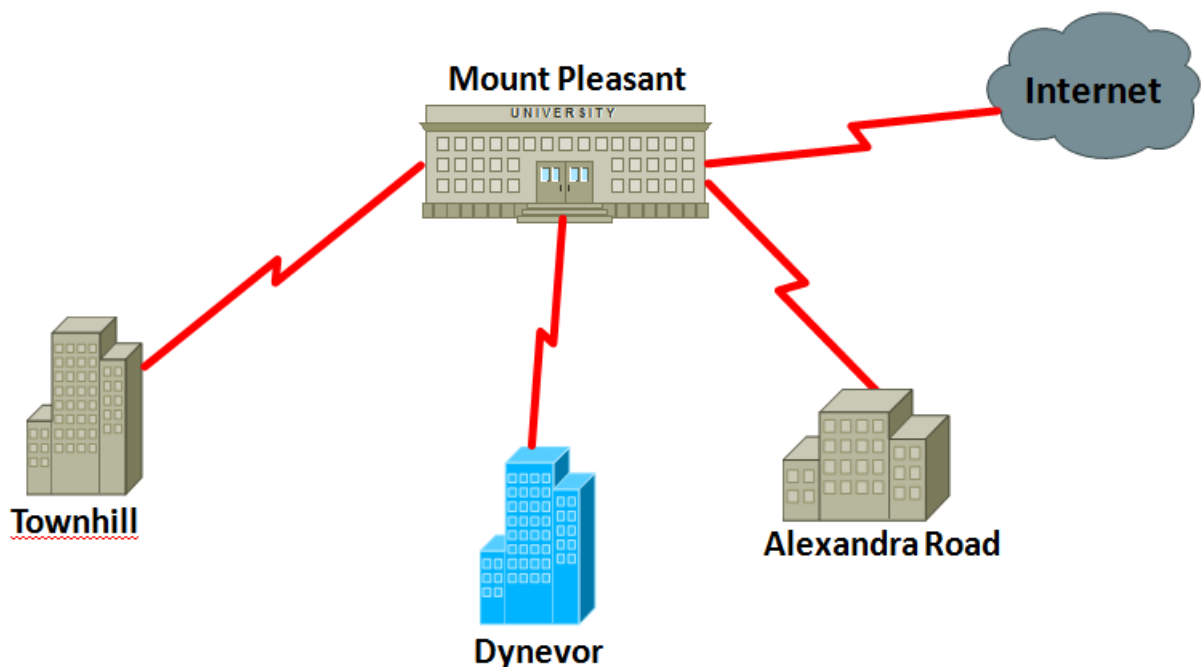


Figure 1

(20 Marks)

QUESTION TWO

- (a) Describe Dial-on-Demand routing and explain how it works. **(13 marks)**
- (b) The two types of interfaces of ISDN are BRI and PRI. What do you understand about these interfaces and channels used? **(12 marks)**

QUESTION THREE

- (a) Explain Virtual circuits and the types. **(8 marks)**
- (b) Refer to the figure 2, Router R2 is not able to establish connectivity with R1 and R3. Identify the problem and solve it. **(9 marks)**

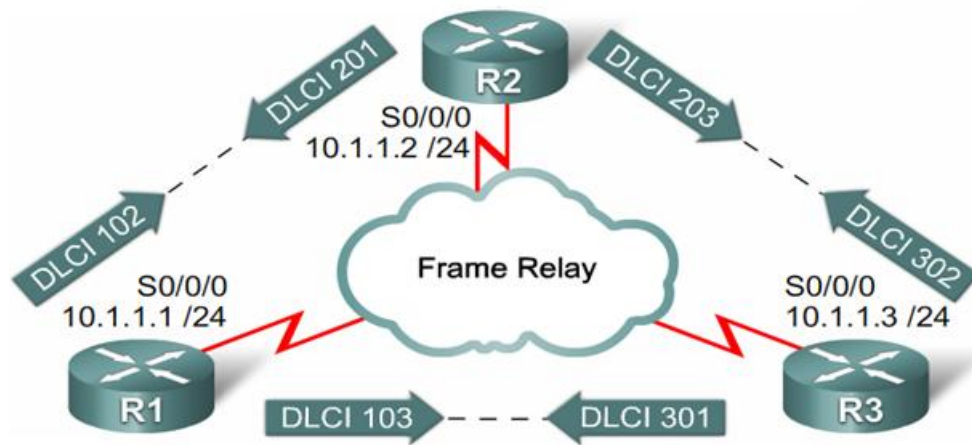


Figure 2

```
R2(config)# interfaces0/0/0
R2(config-if)#ip address 10.1.1.2 255.255.255.0
R2(config-if)#encapsulation frame-relay
R2(config-if)#frame-relay map ip 10.1.1.1 102
R2(config-if)#frame-relay map ip 10.1.1.3 302
```

```
R3(config)# interfaces0/0/0
R3(config-if)#ip address 10.1.1.3 255.255.255.0
R3(config-if)#encapsulation frame-relay
R3(config-if)#frame-relay map ip 10.1.1.1 103
R3(config-if)#frame-relay map ip 10.1.1.2 203
```

```
R1(config)# interfaces0/0/0
R1(config-if)#ip address 10.1.1.1 255.255.255.0
R1(config-if)#encapsulation frame-relay
R1(config-if)#frame-relay map ip 10.1.1.2 201
R1(config-if)#frame-relay map ip 10.1.1.3 301
```

- (c). Describe Frame Relay subinterfaces and explain it types in detail. **(8 marks)**

QUESTION FOUR

(a) Point-to-Point Protocol offers different configuration options, explain them in detail.

(8 marks)

(b) Explain data compression and error correction methods used in asynchronous connections.

(12 marks)

(c) When a local area network is connected to the Internet, the private IP address is translated into public IP address. Refer to figure 3, write down the steps to configure static NAT.

(5 marks)

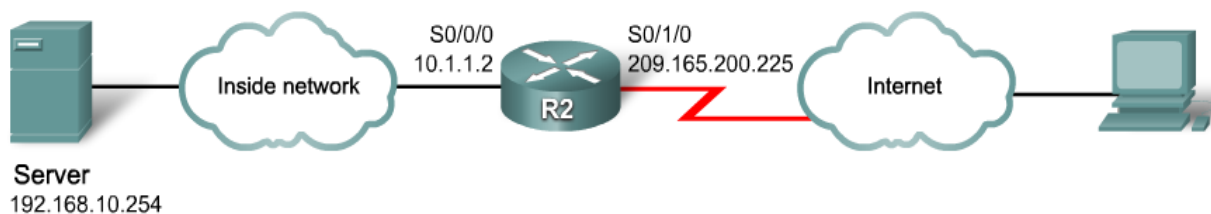


Figure 3