



PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Midterm Examination Semester II :

Academic Year : 2009

Date : 23 December 2009

Time : 13.30 – 16.30

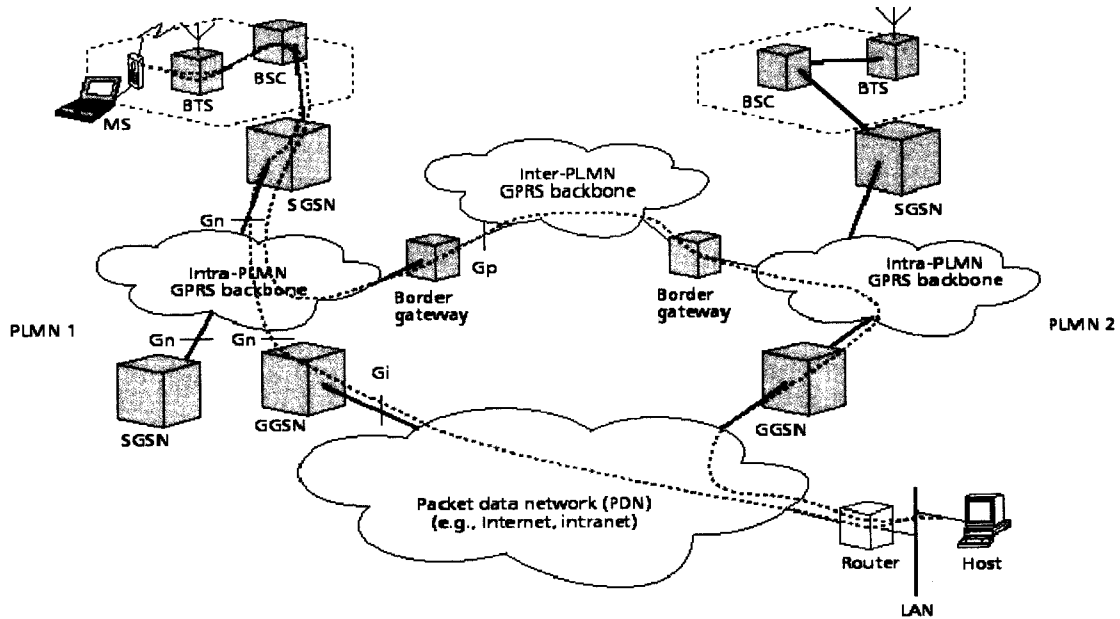
Room : Robot lecture hall

Subject : 241-513 Advanced Information Engineering Design and Systems II

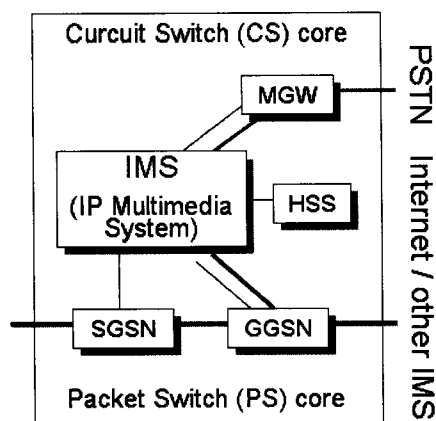
Instruction:

- Make sure that there are 9 problems (90 points) in your exam paper.
- This is closed book exam and you have 3 hours to complete it.
- All of your answers can be written either in Thai or English.
- Dictionary and calculator are allowed, but computer is not.

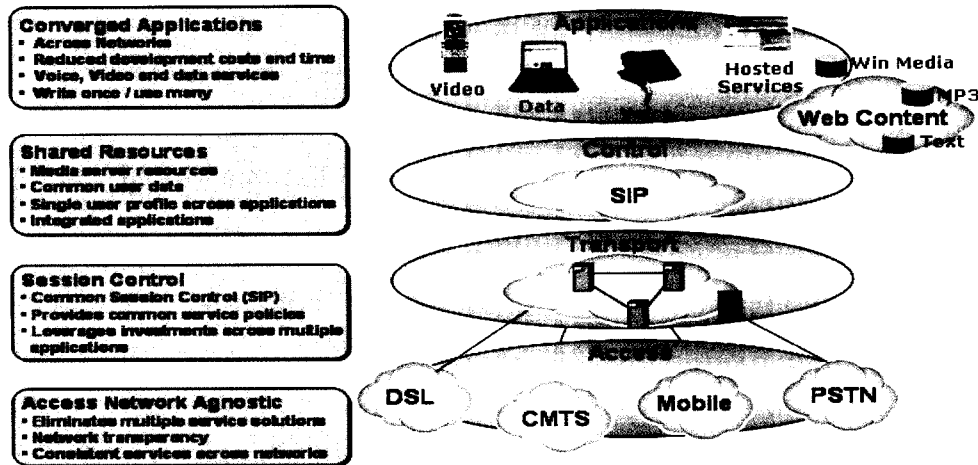
1. Describe dominant features or technological differences in various generations of public land mobile networks (PLMN) [10 points]
2. From the given GPRS network architecture in the picture below, explain how two key functionalities, SGSN (Serving GPRS Support Node) and GGSN (Gateway GPRS Support Node), are supported for packet routing. [10 points]



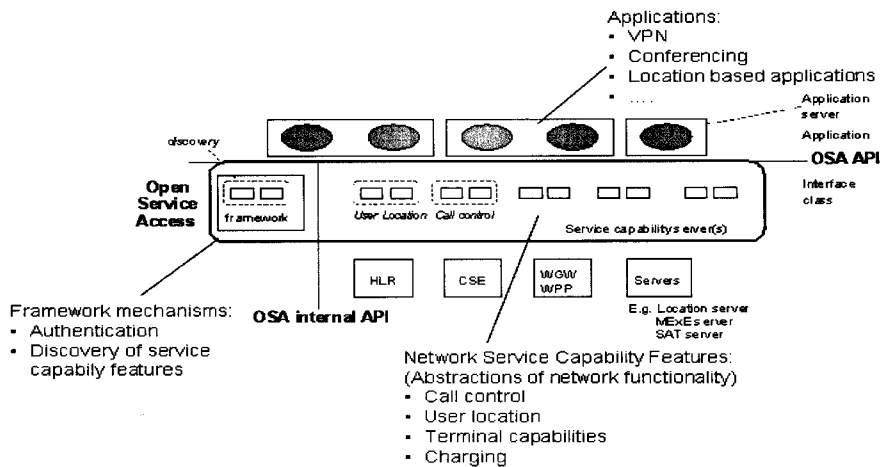
3. From the 3GPP Release 5 (and beyond) network architecture given in the figure below, explain the key role of IP Multimedia System (IMS) and the function of SIP protocol in this system. [10 points]



4. Based on the picture below, explain briefly how the IMS will give benefits to the Convergence of Applications from different kind of networks. [10 points]



5. Regarding the Network and Service Convergence in modern telecommunication system, explain how application developers can get benefits from the Open Service Access (OSA) Application Interface (API), which is shown in the picture below. [10 points]



6. Give reasons that make RFID Technology has benefits over that of Bar Codes [10 points]
7. Comparing with the Active RFID tags, explain why the passive RFID tags are considered not appropriate for using as wireless authentication device (autoID) for person in a serious security system. [10 points]

[10 points]

8. Based on the paper “Location-Based Push Services in Wireless LAN Hotspots” studied in our lecture class, answer the following questions.

- What is the meaning of push services?
- How can the location of mobile devices be determined?
- What is the role of SNMP protocol in the proposed mechanisms?

[10 points]

9. Based on the paper “Bluetooth based wireless Internet applications for indoor hot spots: experience of a successful experiment during CeBIT 2001” studied in our lecture class, explain why Bluetooth base station is preferred to work as a micro-server in (c), rather than the other working mode, e.g. as an access point or as a wireless router in (a) and (b) respectively. [10 points]

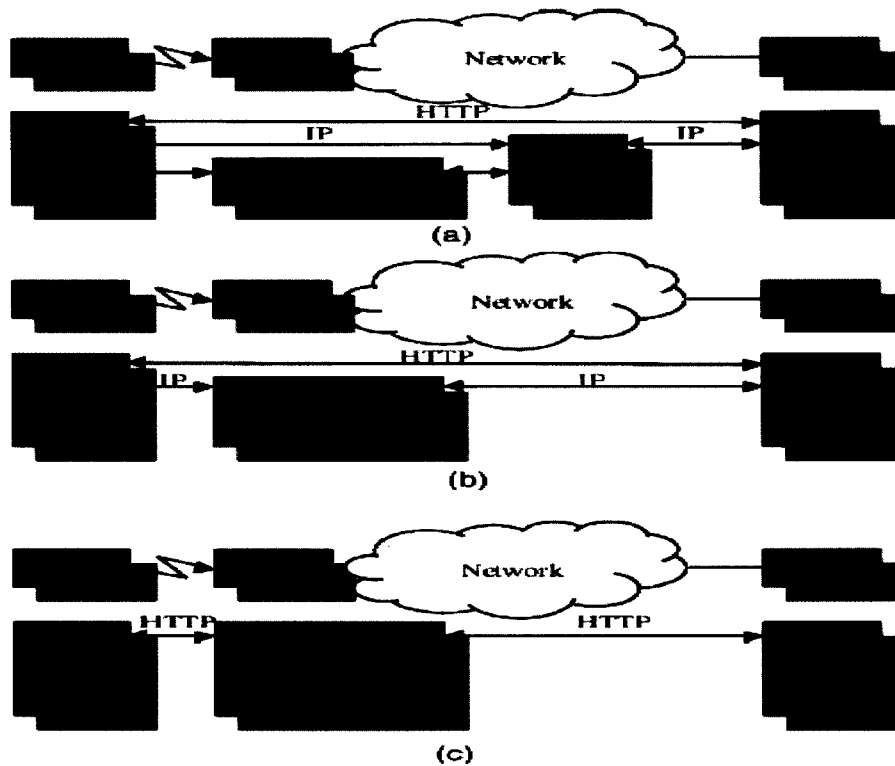


Fig. 2. Three different modes of operation of the Bluetooth base station. As an access point (a), as a wireless router (b) and as a micro-server (c).