Province of the
EASTERN CAPE
EDUCATION

DIRECTORATE SENIOR CURRICULUM MANAGEMENT (SEN-FET)

HOME SCHOOLING SELF-STUDY WORKSHEET ANSWER SHEET

SUBJECT	COMPUTER APPLICATIONS TECHNOLOGY	GRADE	10	DATE	Term 1 to 4
TOPIC	Networks, Internet and World Wide Web **Provided by DBE**	**TERM 1 TO 4 REVISION**		All software covered	

Level 1

1. What is a network? (4)

   Two or more ✓computers and/or other hardware devices✓ linked together✓ through communication channels ✓ (wired/wireless).

2. What is the function of a network? (3)

   It allows electronic communication✓ and resources✓ and allows devices in the network to share data✓

3. What is a

   a. personal area network (PAN) (3)

   Network that connects computers and devices✓ in an individual's working space✓ using wired and/or wireless technology✓

   b. home area network (HAN)

   Network that connects computers and devices✓ in a home✓ using wired and/or wireless technology✓

   c. Body area network (BAN) (3)

   A body sensor network is a type of PAN ✓that wirelessly connects sensors✓, worn by/carried by/implanted in/attached to a human body✓

4. What is a network interface card (NIC)? (4)

   Hardware device✓ that plugs into the motherboard✓ to provide a network connection ✓to a computer or device that does not have built-in networking capability to access a network✓

5. What is the function of a

   a. Modem? (3)

   Communication device that sends and receives data and information✓ and connects to the ISP ✓to provide access to the internet ✓

   b. Switch? (2)

   A device that provides a central point for cables in a network✓ as well as connecting to other LANs on the premises✓

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c. Router? (2)

A communication device that connects multiple computers or other routers together✓ and transmits data to its correct destination on the network✓

6. What is media in the context of a network? (3)

Communication channels ✓used to connect ✓computer and other devices in a network to and carry communication signals between the devices✓ in the network

7. List the two main types of network media (2)

Physical transmission lines (cables)✓ (e.g. fiber-optic cable) and wireless transmission media✓ (e.g. radio waves)

8. What is a wireless access point (WAP)? (4)

A central communication device (with high-quality internal or external antennas)✓ that allows computers and devices to transfer data wirelessly✓ among themselves or to a wired network✓ using wireless technologies✓ such as Wi-Fi

9. What is the Internet? (3)

Internet is a global✓, interconnected *network* of computing devices✓ and other networks that supports a wide variety of interactions and communications between its devices✓

10. What is the World Wide Web (WWW)? (3)

WWW consists of a worldwide collection of electronic documents (called webpages)✓ and is one set of *software services*✓ running on the **Internet**✓

11. List four services that the Internet offers (4)

Email✓, Instant messaging✓, VoIP✓, FTP✓ WWW✓ (any 4 appropriate services)

12. Wat is an Internet Service Provider (ISP) (3)

A business✓ that provides access to the internet✓ at a cost✓

13. What are the following used for:
   a. Search engine (3)

Software✓ that finds websites, webpages, images, videos, news, maps and other information✓ related to a specific topic✓

   b. Browser (3)

Software✓ that enables users with an internet connection ✓to access and view webpages ✓on computers or mobile devices

   c. Web server (5)

A computer ✓that stores webpages✓ and delivers webpages requested ✓ via a browser ✓to your computer✓

14. What is an IP-address? ()

An IP-address is a sequence of numbers ✓that uniquely identifies the computer or device connected to the Internet or any other network✓

15. What is a hot spot? (2)

A wireless network ✓that provides internet connections ✓to mobile devices and computers

16. What is a firewall? (3)

Security technology✓ — computer hardware or software✓ — that protects a network's resources form intrusion by users on another network such as the Internet✓.

17. What is digital communication? (3)

The process✓ in which two or more computers or devices✓ transfer data, instructions and information✓.

18. What is
    a. Wi-Fi   (3)
       A communication standard✓ that uses radio waves✓ and that specifies how two wireless
       devices communicate over the air with each other✓
    b. Bluetooth   (4)
       Network protocol ✓that defines how two Bluetooth enabled devices✓ use short ranger radio
       waves✓ to transmit data✓
    c. Cellular   (3)
       Network standard ✓that defines how high-speed cellular transmissions use broadcast radio ✓to
       transmit data for mobile communication✓
19. What is the function of a firewall?   (3)
    Protects a network ✓by filtering traffic✓ and blocking outsiders from gaining unauthorized access to
    the private data on your computer✓
20. Name three cybercrimes   (3)
    Steal or alter data✓, steal personal data/information such as passwords✓, Gain unlawful use of
    computers or services or access to networks✓, Create and/or distribute malware✓
    (Any three valid answers)
21. In the context of the Internet, what is uploading and downloading?   (2)
    Uploading is the process of putting web pages, images and files onto a web server✓.
    Downloading is the process of getting web pages, images and files from a web server✓.
22. What is a
    a. Website   (4)
       A collection of related webpages✓ and associated items✓ such as documents and photos,
       stored on a webserver ✓ linked together under one domain✓
    b. Webpage   (2)
       An electronic document on the web✓ which can contain text, graphics, animation, audio and
       video✓.
    c. URL   (3)
       The unique address✓ of a webpage✓ that is used by the browser to retrieve the webpage✓
    d. Hyperlink   (2)
        Hyperlink is an icon, graphic, or text✓ that links to another file, webpage or object. ✓
23. State whether the following statements are true or false
    a. A wireless router is a device that performs the functions of a router as well as a wireless access
       point   (1)
       True✓
    b. Some routers can perform the functions of a router and a modem   (1)
       True✓
    c. The terms web and internet are interchangeable   (1)
       False✓ – internet is a network and www (web) is a service on the internet
    d. A domain name is a text-based name that corresponds to the IP-address of the server that hosts
       a website   (1()
       True✓
    e. All webpages from a website have the same URL   (1)
       False – each webpage has a unique web address/URL

f. A search engine delivers a webpage to your computer (1)

False✓ – browser delivers a webpage

24. Provide one word/term/concept for each or the following descriptions

a. Software used to access websites and web pages and that interprets HTML code and allows you to see HTML document as an electronic, readable document (1)

Browser✓

b. Hardware that allows a computer to connect to a network via a port (1)

NIC✓

c. A web address that is unique to each resource on the web (1)

URL✓

d. Hardware/software combination that protects network resources from outside intruders (1)

Firewall✓

e. A computer where files are stored which can be accessed via the internet using HTTP (1)

Webserver ✓

f. Device that connects to the ISP to provide Internet services to a computer (1)

Modem✓

g. Used with a browser to look for specific information on the web (1)

Search Engine✓

h. A software service on the Internet that connects that makes it much easier for people to get information, share and communicate (1)

WWW✓

i. A group of two or more connected computers or devices connected to a central communication device that are confined to a small geographical such as a small office or home (1)

HAN✓

j. Any criminal activity that involves a computer, networked device or a network (1)

Cybercrime ✓

k. Digital communication protocol that defines how a network uses radio signals to communicate with a tag (transponder) placed in or attached to an object, person or animal (1)

RFID✓

l. Digital communication protocol that defines how a network use close-range radio signals to communicate between two devices or objects, e.g.contactless credit card (1)

NFC✓

25. List two physical network transmission media (2)

Fiber-Optic cable✓, Copper cable✓, (coaxal or twisted pair cable)

26. List three wireless network transmission media (2)

Broadcast radio (Bluetooth, Wi-Fi) ✓, Cellular radio (4G/5G) ✓, Microwave✓, Satellite✓ infrared ✓ (any 3)

27. Backup is regarded as the no 1 security measure for data. What is a backup? (4)

A backup is a copy✓ of important data✓ that is stored on an alternative location✓, so it can be recovered if deleted or it becomes corrupted✓.

28. Explain what 4G/5G refers to and how it is used to establish internet connection (4)

It refers to a cellular service✓ using cellular radio towers✓ – internet access is possible when the device connects to the cell tower via a SIM card. To be able to access the Internet through 4G/5G, you need data✓ which can be bought from a cellular service provider✓ such as Vodacom

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29. Explain what Wi-Fi refers to and how it is used to establish internet connection (4)
    Wi-Fi is a connection standard provided by a wireless network✓, that enables network sharing between devices✓. To use Wi-Fi, you need to be able to access WAN✓which would use a modem and fixed line or 5G modem to connect to the Internet✓

30. Study the following graphics and answer the questions that follow

    a. What type of device is A (2)
       Wireless✓ modem-router✓

    b. What type of transmission media is used between device A and the other devices. Provide the type as well as an example (2)
       Wireless✓, e.g. radio waves✓

    c. What would the function(s) of device A be? (3)
       Serve as a wireless access point (WAP)✓,
       connects to the ISP ✓to provide access to the internet (modem)✓ and routes the data between the devices (router) ✓

    d. Device A is labelled LTE (4G). Explain what LTE(4G) refers to (3)
       4th generation of cellular transmission✓ that uses cellular radio (radio waves) that is a form of broadcast used in wireless modems and mobile phones✓ to transmit voice and digital messages✓

    Device A

    e. What would device A require to connect to provide data and connect the Internet (1)
       SIM card ✓

31. To be able to use the Internet, one would need an internet service provider. Describe two roles of the service provider. (3)
    It provides Internet access ✓for customers through fiber to the home/business or cellular data services✓.
    It also provides other services such as e-mail✓, webhosting (any other applicable service) and serves as the gateway to the Internet and everything you do online

Level 2

32. What can be shared over network? (3)
    share hardware✓, share data and information✓, share software✓, transfer funds (EFT)✓

33. For each of the following, choose the item in the list that does not logically belong in the list and explain why it does not belong

    a. Edge, Opera, Google, Chrome, Firefox (2)
       Google✓ is a search engine while others are browsers✓

    b. Router, modem, switch, Fibre Optic, NIC, Hub, (2)
       Fibre✓ is a communication line/transmission media while other are communication devices✓

    c. Cellular, Wi-Fi, Fibre optic cable, broadcast radio, satellite (2)
       Wi-Fi ✓is communication standard while other are transmission media✓

    d. VoIP, FTP, email, email lists, Plug-in (2)
       Plug-in✓ is a program that extends browser capability while others are internet services✓

34. Why would one want to use a network? (5)
    To communicate✓, share hardware✓ such as printer, share software✓, share data and information✓, transfer funds✓

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35. Explain the relationship between the Internet and the World Wide Web (WWW)? (2)

Internet is global interconnected network (infrastructure) ✓ whilst WWW is a service running on the internet ✓

36. Describe the relationship between a website and a webpage? (4)

A webpage is an electronic document on the web ✓ and a website is a collection of related webpages✓ with a common topic/thread✓, linked together under one domain✓

37. Why would people want to use the WWW? (2)

Access data and information✓, share their work and thoughts through social networking sites✓, blogs and video sharing

38. Study the following graphic of a home network (HAN) and answer the questions that follow:

a. Why does the HAN use a router and a modem? (4)

The router is required to connect the devices to the same network✓ and routes the data between the network devices ✓while the modem connects to the ISP✓ and establishes the internet connection to the network✓

b. How does the laptop and the tablet communicate with the router?

Through wireless technology✓ such as Wi-Fi✓

c. When working on the PC, how would one be able to print documents?

Share the printer on the network so all computers would be able to use it to print

d. Explain how the network and computing devices could be protected from unauthorised intrusions (4)

Use a router✓ which also functions as a firewall✓ and install personal firewalls✓ on each computing device✓

e. What type of media would connect the modem to the Internet? Provide an example (2)

Physical media✓ such as fibre cable✓

39. Explain what the minimum requirements would be for a person with a personal computer to access the Internet (3)

An internet service provider (ISP) ✓, a modem (wired or wireless) ✓ and data✓

40. Most devices and computers today are equipped with Bluetooth. Describe three uses of Bluetooth technology

Connects devices✓, such as a mobile phone or portable media player with vehicle stereo which use the vehicle's speakers✓

Transfer photos wirelessly✓ from a digital camera to a laptop✓

Play music on a smart phone✓ through the speakers of the computer or other Bluetooth-enabled device✓

Transmit data from a medical device✓, such as a blood glucose monitor, to a mobile phone or computer✓

Establish a PAN✓ to share documents, appointment calendars between devices and print documents✓

Use GPS receivers to send directions✓ to a mobile phone or GPS-enabled device✓

(Any three appropriate uses)

41. Discuss three advantages of Bluetooth technology (3)
    If devices have Bluetooth capability, using Bluetooth is free
    Bluetooth technology requires low processing power and use little energy so it is not heavy on a device's battery
    Establishing a wireless Bluetooth connection is easy
    Bluetooth connections have low security risks as it can be made hidden and set to a unauthorised so that users must authorise each connection request
    Bluetooth technology is standardise globally so it can connect to devices that are not the same make or model
    Bluetooth connections have little risk of interference with other wireless networks
    (Any three appropriate disadvantages✓✓✓)

42. Discuss two disadvantages of Bluetooth technology (2)
    It is low in bandwidth✓ and because of its slow data transfer rates, it is not an ideal solution of replacing a HAN
    Limited range✓ (though they do not have to be in the same room within the same line of sight)
    (Any two appropriate disadvantages✓✓)

43. A mobile phone can connect to the Internet via cellular technology or through Wi-Fi. Briefly explain the difference between these two technologies by explaining under which circumstance you will use each of these. (4)
    Use Wi-Fi when you have access to a WAP/wireless router✓ while at home (paid service) or in a coffee shop (free service), usually within limited range✓, but if you are travelling you will use cellular (e.g. 4G) that provides a wide range✓ because as you drive from one cell tower to another the radio signals transfer from the one cell tower to the other✓

44. Categorise each of the following wireless communications by ticking the description that applies to each (7)

Wireless Communication	Radio signals	Cellular radio	High-speed connection	Short range	Medium range	Long range	Hot spot tech
Wi-Fi							
Bluetooth							
Cellular							

1 mark for each correct cell (ticked/unticked) = 21/3 : 7 marks

Wireless Communication	Radio signals	Cellular radio	High-speed connection	Short range	Medium range	Long range	Hot spot tech
Wi-Fi	✓		✓		✓		✓
Bluetooth	✓			✓			✓
Cellular		✓	✓			✓	

45. Describe a simple, wireless way for one computer to connect to the Internet (3)
    Use wireless modem (or cellphone)✓ with SIM card that connects to cell tower✓, plugged into the computer using USB port✓/hotspot

46. Why would you want to connect to a wireless network on your smartphone instead of using your mobile data plan? (3)
    Data usage on the wireless network might be free (hotspot in coffee shop) ✓ or part of an uncapped internet plan at home which you can use at no additional cost ✓ while using your mobile phone reduces the data which you pay for and you may have to buy more data when the data runs out✓

47. What other items, besides webpages, can a search engine find on the web? Name two (2)
    Images, videos, maps (any two correct ✓✓)

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48. Explain how the use of a HAN could benefit a family (3)

All family members could share a single, high-speed internet connection✓

All can connect to the Internet at the same time✓

Can access each other's music, photos, videos and other content and computers throughout the house✓

Play multi-player games with players on other computers and mobile devices✓

(Any three valid reasons)

49. Provide the search text that you will use in a search engine to find the admission criteria for your school (2)

School name✓ + admission criteria✓

50. Study the following advertisement and answer the questions that follow:

a. How much primary memory does the computer have? (1)

4 GB✓

b. What is the size of the local disk? (1)

256 GB✓

c. What type of computer is advertised? Motivate your answer (2)

Convertible/Hybrid (2-in-1)✓. It can be used as a laptop and a tablet✓

d. What input device is shown in the picture and what is the function of this input device (3)

Digital Pen/Stylus ✓ Captures and converts user's handwriting or drawing✓ into digital format ✓

e. List two forms of output identifiable in the advertisement (2)

Monitor✓, speakers ✓

f. The computer device comes with a Wi-Fi router. Explain how the Wi-Fi router is used in this context. (4)

It is a mobile communication device✓ that connects a device to the Internet✓. It requires a sim card ✓and uses cellular radio✓ (3G/4G/5G) to connect to the Internet

g. Besides Wi-Fi, what other network protocol is mentioned in the advertisement. What for and how would one be able to use it? (4)

Bluetooth✓. It is used for transmitting data ✓between devices ✓using short range radio waves✓

51. You have a Wi-Fi network and a data plan allowing unlimited data at home. When working at home and you are in range of your Wi-Fi, your computer is connected to your Wi-Fi network. Away from

home, you use a wireless modem that plugs into an USB port of your computer. Every time you plug in this wireless USB modem, the following message is displayed:

☑ Download over metered connections

To help prevent extra charges, keep this off so device software (drivers, info, and apps) for new devices won't download while you're on metered Internet connections.

Explain the message in the context of the situation described above. (2)
Turning it off, all automatic updates are disabled ✓and unnecessary usage of data is disabled ✓

Level 3

52. Study the following graphic of a home network (HAN) and answer the questions that follow:
    a. If the network's internet connection is interrupted (e.g. loadshedding), which device will still be able to access the Internet. Motivate your answer. (3)
    The tablet ✓as it may have a SIM card using 4G/5G✓ and a mobile internet service provider✓ such as Vodacom

53. Cyberthieves can steal your Wireless HAN's data.
    a. Describe ways in which they can steal the data (1)
    The network has no security such as a password and can be accessed by anyone within range✓
    The thieves were able to determine/get hold of the network name and password and reprogram their modem settings to duplicate your network settings✓
    (Any one)
    b. Suggest one way to improve the HAN's security (1)
    Change the default network name and password✓
    Enable the router's firewall✓
    (Any one ✓)
54. Connecting wirelessly to a public hot spot at a coffee shop can be convenient and practical, but also risky. Provide two guidelines to follow to lower risks (2)
    Turn of any filesharing✓, avoid logging in to unknown websites✓ visit encrypted websites only✓, avoid using mobile apps that require financial or personal information such as banking app✓, (any 2 valid guidelines)
55. Bluebugging occurs when cybercriminals exploit Bluetooth devices that have been paired. Suggest two actions to prevent Bluebugging. (2)
    Turn off Bluetooth capability if it is not required✓
    Pair your device for the first time in a secure location such as your home to prevent criminals from intercepting your device✓
    When Bluetooth is required, ensure device's visibility setting hidden✓

Set all paired devices to unauthorised so that the user must authorize each connection request✓
(Any two)

56. Study the data plans that provides Internet access using an ISP and answer the questions that follow

Advert A

Hisense H218 Black Box Router 150Mbps 4G
or Huawei R219h Mobile Wi-Fi Router 150Mbps
Connects up to 10 devices

40GB Data
20GB Data PM (Anytime) + 20GB Night Owl (12am-5am)

Device Features:
- LTE Cat4
- Windows,Linux ,MAC
- 2300mAH
- Connect up to 10 Devices

    Huawei R219 Mobile Wi-Fi Router 150 Mps

- Connect up to 10 Users
- 2000 mAh Battery
- DL/UL: 150/50Mbps

R289 PMx24 |

Advert B
Fibre to the Home
Frogfoot Just connect

20Mbps Download speed & **20Mbps** Upload speed

Uncapped

R 819.00 PM

Free Installation + No Activation Charge + Vodafone Router Included

20Mbps Download Speed

20Mbps Upload Speed

∞ Uncapped

Router included |

Advert C

Nokia FastMile 5G Gateway 1 Router 300Gbps 5G
Connects up to 64 devices

200GB Data
100GB Data PM (Anytime) + 100GB Night Owl (12am-5am)

Device Features:
- Fully self-contained, full featured indoor residential gateway
- Carrier aggregation across supported 4G/5G bands
- 5G New Radio (NR) WAN connection with 11 dBi high gain antenna
- Wi-Fi (3x3 802.11b/g/n, 4x4 802.11ac MU-MIMO) LAN

More Data

R699 PMx36 |

a. Explain the difference between the router in Advert A and the router in Advert B? (8)

Advert A is a mobile router✓ that one can use anywhere with 4G coverage✓, while the router in Advert B would be for home usage✓ (non-mobile) that will require a fixed line connection✓
Mobile router usually has place for a sim card / uses a sim card✓ and mobile radio to connect to a cell phone tower✓, while Fibre connection can be done with a router connection that allows for connection to network cables✓ and will also then connect to a WIFI router✓

b. What additional device may one require for Advert B, if one wants to connect to the Internet? Explain your answer. (2)

Modem✓ if the router included does not include the functionalities of a modem ✓.

c. The company explained that they will install one device and that no additional hardware will be required. Why not? Motivate your answer (2)

The router included is a Modem-router combination✓ so it will also facilitate internet access✓

d. Wy can the router in Advert C connect up to 64 devices as opposed to the one in Advert A that can only connect up to 10 devices (6)

Router A is used in mobile conditions ✓and will most likely be used to connect only a few devices✓ like one laptop and two phones etc. This allows the manufacturer to produce a cheaper / smaller router✓ able to run on a battery for a few hours✓.
Router B will be used in a setting where multiple devices✓ like WIFI printer, smart TV, IOT devices, Laptops, desktop, DSTV EXPLORA, chrome cast, game console, a few phones etc. will connect on either a temporary or permanent basis✓, this router usually has no battery and runs off mains✓

e. Advert C states 200 GB data. What will happen if your data usage exceeds 200 GB? (2)

You will have to buy✓ additional data✓

f. Advert A refers to 4G and advert C refers to 5G. What is the difference? (3)

5G is faster✓ and allows for faster data transfer✓, is more expensive but better✓

g. Explain the difference between download and upload as indicated in Advert B (2)

Upload is the speed at which you can send data✓ (files, emails etc) to the internet vs download is when you receive data from the internet✓
Most people want more speed for downloading than uploading. It is therefore cheaper for an ISP to provide those connections which is evident in the packages you can buy

h. Study the two advertisements below. Why is the one more expensive that the other one? (1)

Vodacom Fibre 20Mbps Uncapped	Vodacom Fibre 20Mbps Uncapped
Instant, super-fast and uninterrupted Internet connectivity	Instant, super-fast and uninterrupted Internet connectivity
20 Mbps 20 Mbps	20 Mbps 2 Mbps
Uncapped	Uncapped
Free WiFi Router Incl.	Free WiFi Router Incl.
Basic Voice Line: T&C apply	Basic Voice Line: T&C apply
No out of bundle rates	No out of bundle rates
R819.00	R759.00
More Info Order now	More Info Order now

The download speed of the cheaper one advert is only 2 Mbps✓