QUESTION ONE

(a) Describe the following connectivity devices:

(i) Repeater (4 marks)

(ii) Bridge (4 marks)

(iii) Router (4 marks)

(iv) Gateway (4 marks)

(b) State the PDUs in the following devices:

(i) Repeater (1 mark)

(ii) Bridge (1 mark)

(iii) Router (1 mark)

(iv) Gateway (1 mark)

QUESTION TWO

(a) What is subnetting? (2 marks)

(b) Why is subnetting necessary? Give three (3) reasons (6 marks)

(c) What is a broadcast domain? (2 marks)

(d) Complete the table below of a classful IPv4 addressing. Where applicable answers can be to the power 2 (10 marks)

CLASS	NUMBER OF BLOCKS	BLOCK SIZE	APPLICATION
A	(i).....	(ii).....	Unicast
B	16,384	65,536	Unicast
C	2,097,152	(iii).....	Unicast
D	1	268,435,456	(iv).....
E	1	268,435,456	(v).....

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QUESTION THREE

Describe the following types of WAN transmission terminologies:

(a) ATM (4 marks)

(b) PSTN (4 marks)

(c) ISDN (4 marks)

(d) SONET (4 marks)

(e) DSL (4 marks)

QUESTION FOUR

(a) Describe the function of each field found in the IPv6 packet format header (16 marks)

(b) What is the address space in IPv6 (answer to the power of 2) (2 marks)

(c) Which field in IPv6 serves the purpose performed by the protocol field in IPv4? (2 marks)

QUESTION FIVE

(a) Today, wireless networking is becoming almost inevitable. State any four (4) application that are common for wireless networking technologies (8 marks)

(b) Distinguish the following types of wireless networks:

(i) Extended LAN (2 marks)

(ii) Mobile computing (2 marks)

(c) Infrared wireless networks use infrared light beams to send signals between pairs of devices. Explain the following main kinds of infrared LANs

(i) Line-of-sight networks (2 marks)

(ii) Reflective wireless networks (2 marks)

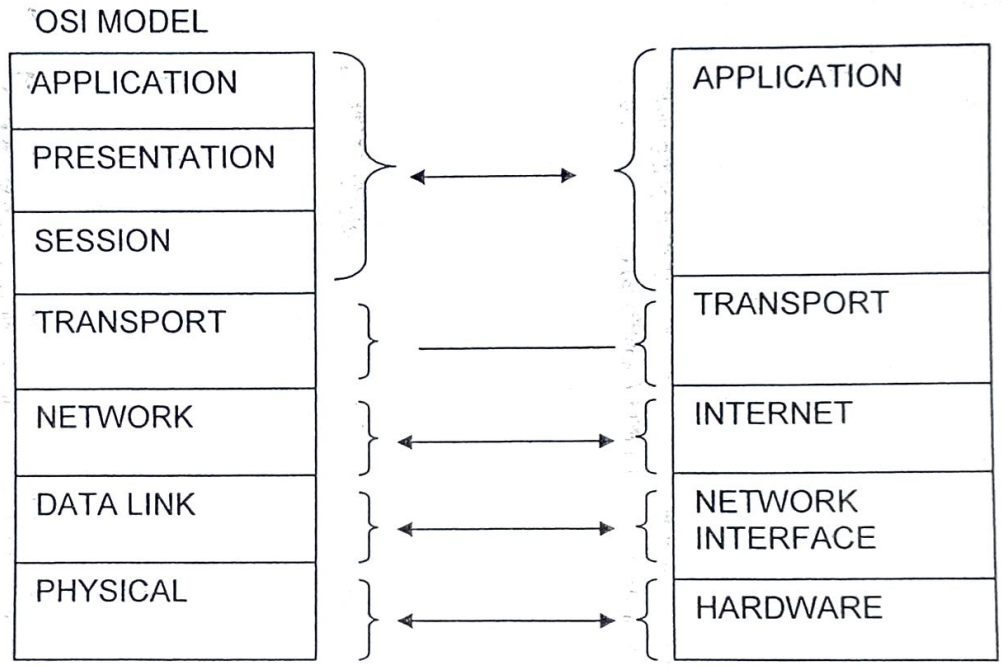
(iii) Scatter infrared networks (2 marks)

(iv) Broadband optical telepoint networks (2 marks)

QUESTION SIX

(a) Correspond the layers of the OSI model to the layers of the TCP/IP

(5 marks)



(b) Describe the functions of the Internet, Transport and Application layers of the TCP/IP

(10 marks)

(c) Describe a VPN (2 marks)

(d) Describe a VPN tunnelling protocol (3 marks)

QUESTION SEVEN

(a) Discuss the following tools used in network troubleshooting:

(i) Digital voltmeter **(2 marks)**

(ii) Time-domain reflectometer **(2 marks)**

(iii) Oscilloscopes **(2 marks)**

(iv) Protocol analysers **(2 marks)**

(v) Cable continuity tester **(2 marks)**

(b) Distinguish between Wired Equivalent Protocol and Wi-Fi Equivalent Access (WPA) **(6 marks)**

(c) Distinguish between TCP and UDP protocols in the transport layer **(4 marks)**