SNS COLLEGE OF ENGINEERING

Department of Computer Science and Technology

Course Name – 19IT503 Internet of Things III Year / V
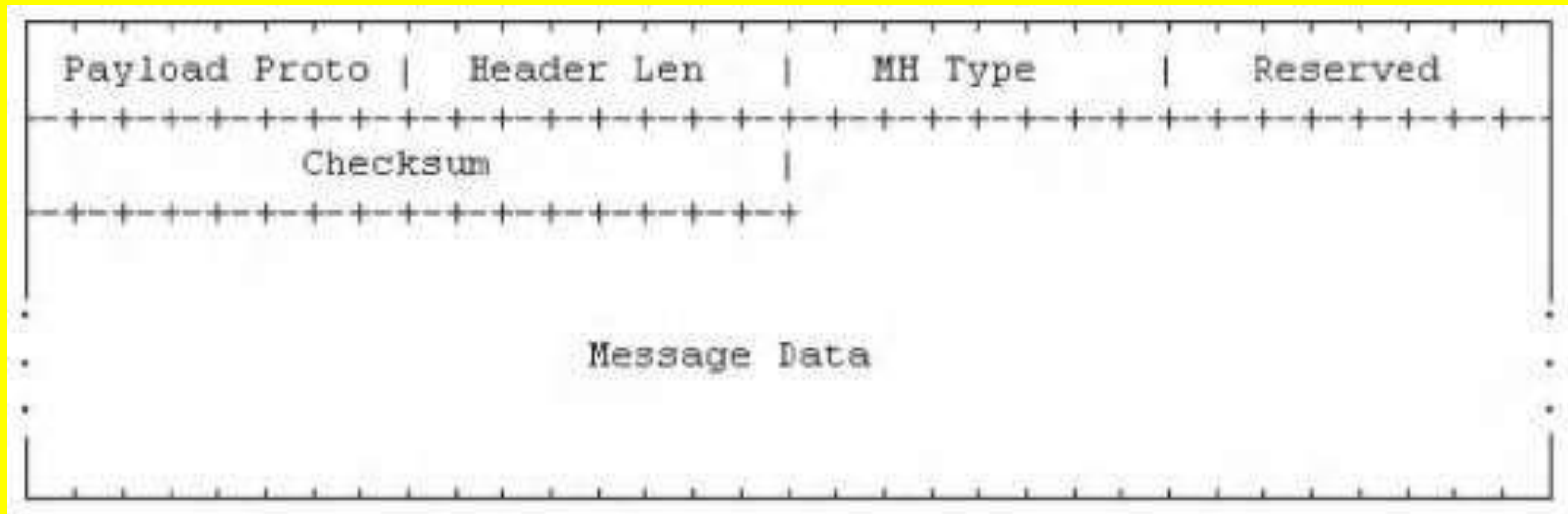
Semester

Unit 4 – IPv6 TECHNOLOGIES FOR THE IOT

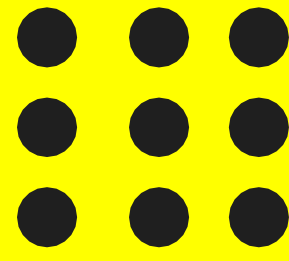### Topic 4- New IPv6 Protocol

New IPv6 Protocol

Mobility Header
- The mobility header is an extension header used by MNs, CNs, and HAs in all messaging related to the creation and management of bindings.

- The subsections within this section describe the message types that may be sent using the mobility header.

New IPv6 Protocol

Mobility Header Fields

Payload Proto	8-bit selector. Identifies the type of header immediately following the mobility header. Uses the same valu es as the IPv6 next header field. This field is intended to be used by a future extension.
Header Len	8-bit unsigned integer, representing the length of the mobility header in units of 8 octets, excluding the first 8 octets.
MH Type	8-bit selector. Identifies the particular mobility message in question.
Reserved	8-bit field reserved for future use. The value must be initialized to zero by the sender and must be ignored by the receiver.
Checksum	16-bit unsigned integer. This field contains the checksum of the mobility header.
Message Data	A variable length field containing the data specific to the indicated mobility header type.

Mobility Message Type

Binding refresh request (BRR) Message	The BRR message requests a mobile node to update its mobility binding. This message is sent by correspondent nodes. The BRR message uses the MH Type value 0.
Home test init (HoTI) message	A mobile node uses the HoTI message to initiate the return-routability procedure and request a home keygen token from a correspondent node. The Home test init message uses the MH type value 1. This message is tunneled through the home agent when the mobile node is away from home. Such tunneling should employ IPsec ESP in tunnel mode between the HA and the mobile node. This protection is indicated by the IPsec security policy database.
Care-of test init (CoTI) message	A mobile node uses the CoTI message to initiate the return-routability procedure and request a care-of keygen token from a correspondent node. The Care-of test init message uses the MH type value 2.
Home test (HoT) message	The HoT message is a response to the Home test init message and is sent from the correspondent node to the mobile node. The HoT message uses the MH type value 3.
Care-of test (CoT) message	The CoT message is a response to the CoT Init message and is sent from the correspondent node to the mobile node. The CoT message uses the MH type value 4.
Binding update (BU) message	The BU message is used by a mobile node to notify other nodes of a new CoA for itself. The BU uses the MH type value 5.
Binding acknowledgement (BA) message	The BA is used to acknowledge receipt of a BU. The BA has the MH type value 6.
Binding error (BE) message	The BE message is used by the correspondent node to signal an error related to mobility, such as an inappropriate attempt to use the home address destination option without an existing binding. The BE message uses the MH type value 7.

New IPv6 Protocol

Mobility Message Type

Two important messages are the BU message and the BA message.

Binding Update(BU)

The BU message is used by an MN to notify other nodes of a new CoA it has acquired.

Acknowledge (A) - The acknowledge (A) bit is set by the sending MN to request a BA be returned upon receipt of the BU.

Home registration (H) - The home registration (H) bit is set by the sending MN to request that the receiving node should act as this node's HA.

Link-local address compatibility (L) – This bit is set when the home address reported by the MN has the same interface identifier as the MN's link-local address.

Key management mobility capability (K) - If this bit is cleared, the protocol used for establishing the IPsec SAs between the MN and the HA does not survive movements; it may then have to be rerun.
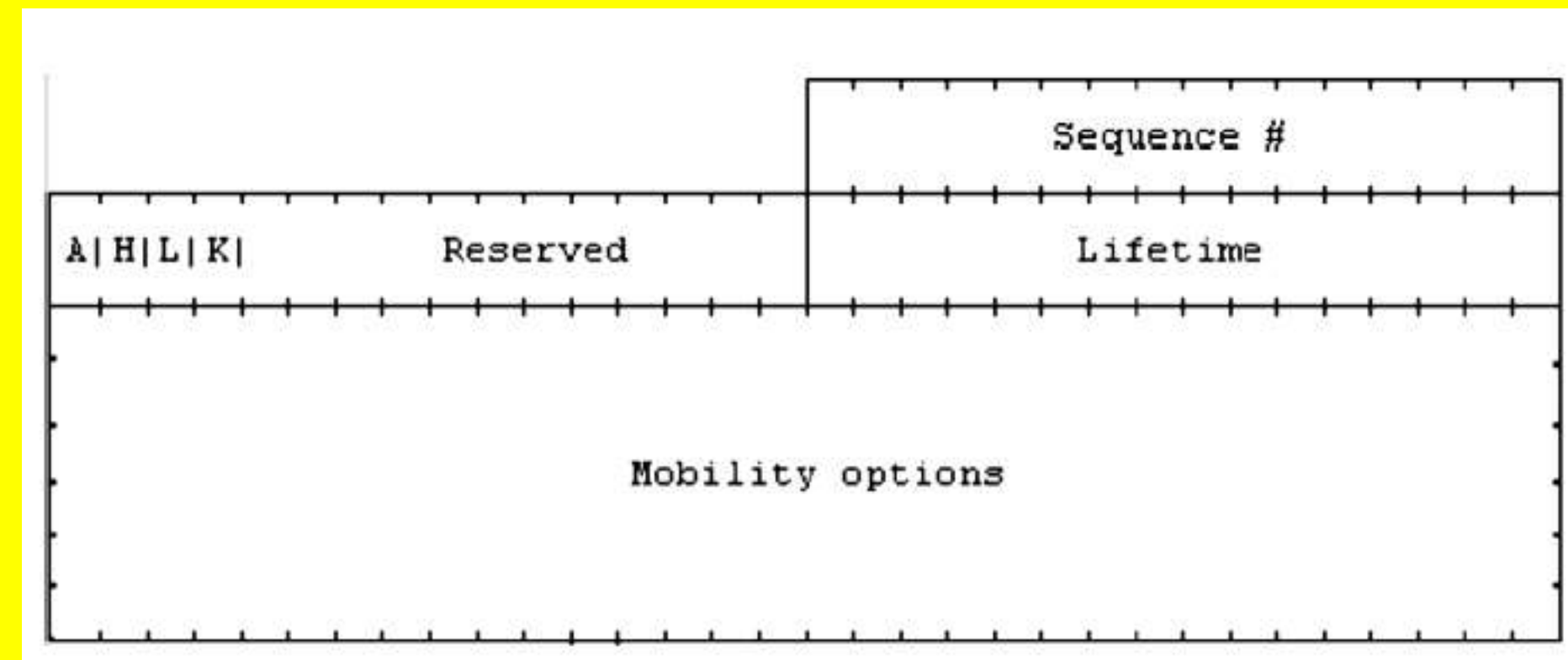
New IPv6 Protocol

Reserved - These fields are unused. They must be initialized to zero by the sender and must be ignored by the receiver.

Sequence number - A 16-bit unsigned integer used by the receiving node to sequence BUs and by the sending node to match a returned BA with this BU.

Lifetime. 16-bit unsigned integer. The number of time units remaining before the binding must be considered expired. A value of zero indicates that the binding cache entry for the MN must be deleted.

Mobility options. Variable-length field of such length that the complete mobility header is an integer multiple of 8 octets long. This field contains zero or more Type/Length/Value (TLV)-encoded   mobility options
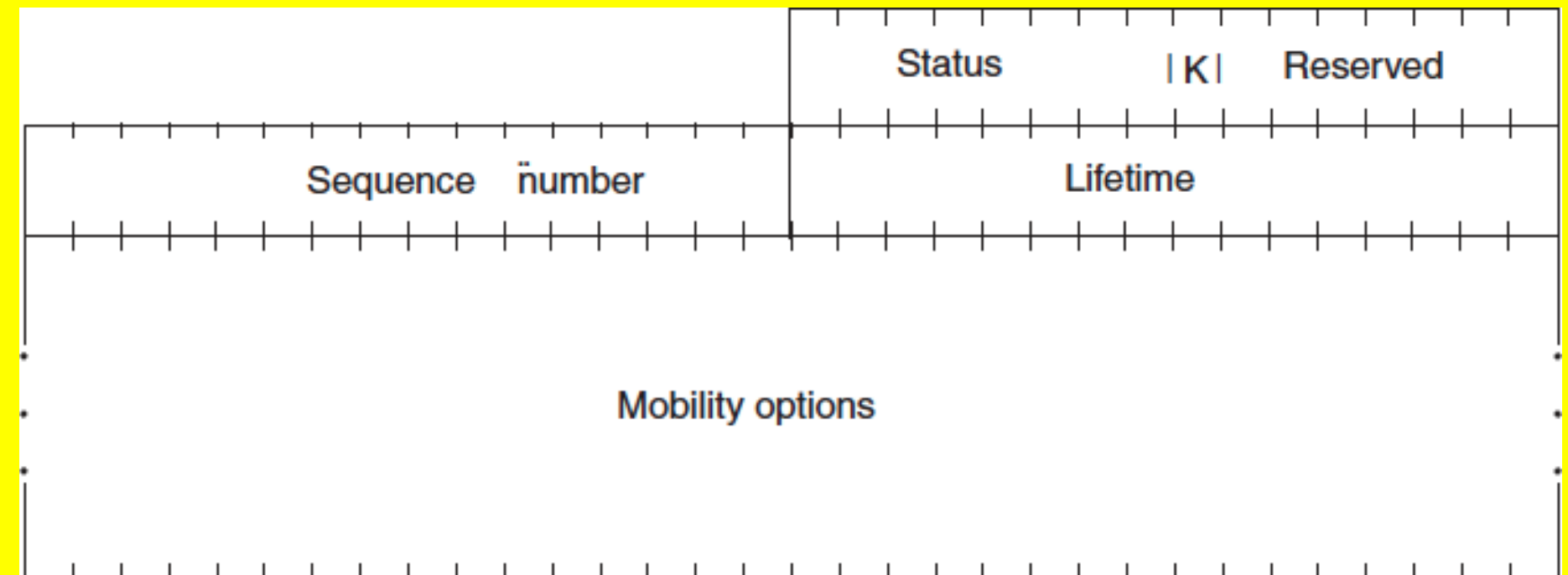
New IPv6 Protocol

Binding Acknowledgement

The BA message is used to acknowledge the receipt of a BU.

Key management mobility capability (K) - If this bit is cleared, the protocol used by the HA for establishing the IPsec SAs between the MN and the HA does not survive movements (it may then have to be rerun).

Reserved - These fields are unused. They must be initialized to zero by the sender and must be ignored by the receiver.

Status - 8-bit unsigned integer indicating the disposition of the BU. Values of the status field less than 128 indicate that the BU was accepted by the receiving node. Values greater than or equal to 128 indicate that the BU was rejected by the receiving node.

New IPv6 Protocol

Binding Acknowledgement

Sequence number - The sequence number in the BA is copied from the sequence number field in the BU. It is used by the MN in matching this BA with an outstanding BU.

Lifetime - The granted lifetime, in time units of 4s, for which this node should retain the entry for this MN in its binding cache.

Mobility options. Variable-length field of such length that the complete mobility header is an integer multiple of 8 octets long. This field contains zero or more TLV-encoded mobility options

THANK YOU