✅ 1. What is ISO 8583?

ISO 8583 is a **standard messaging protocol** used for **electronic payment systems** like:

- POS terminals
- ATMs
- Payment switches

It defines:

- **Message format**
- **Fields (Data Elements - DEs)**
- **Transaction types (MTIs)**

✅ 2. What is the structure of an ISO 8583 message?

ISO 8583 message typically includes:

1. **Message Type Indicator (MTI)** — 4 digits
2. **Bitmap** — Primary (128-bit), possibly Secondary
3. **Data Elements (DE 1 to DE 128)** — Structured fields like PAN, amount, date

Example:

yaml

CopyEdit

MTI: 0200 → Financial transaction request

Bitmap: Indicates which DEs are present

DE2: PAN = 4567123412341234

DE3: Processing Code = 000000

DE4: Amount = 000000010000 (i.e., 100.00)

...

✅ 3. What are some commonly used Message Type Indicators (MTIs)?

MTI	Description
0100	Authorization Request (Online)
0110	Authorization Response
0200	Financial Transaction Request
0210	Financial Transaction Response
0420	Reversal Advice
0800	Network Management Request
0810	Network Management Response

✅ 4. What is a Bitmap? How does it work?

- **Bitmap** is a **64-bit (or 128-bit)** binary map.
- It indicates which **Data Elements (DE)** are present in the message.
- Each bit position corresponds to a DE.

Example (First few bits):

vbnet

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Bitmap: 72F0000000000000

→ Bit 2, 3, 4, 7, 11, 12, 13, 14 are ON → DE2, DE3, DE4, DE7, DE11, etc. present

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✅ 5. What are Data Elements (DEs) in ISO 8583?

They are the actual **fields that carry transaction data**.

DE #	Name	Example
DE2	PAN (Primary Account #)	4567123412341234
DE3	Processing Code	000000 (Purchase)
DE4	Amount	000000010000 (₹100.00)
DE7	Transmission Date & Time	MMDDhhmmss

DE #	Name	Example
DE11	STAN (System Trace Audit Number)	123456
DE12	Time, Local Transaction	hhmmss
DE37	Retrieval Reference #	654321098765
DE39	Response Code	00 (Approved), 05 (Declined)

✅ 6. What is a Processing Code (DE3) and how is it structured?

Format: XXXYYY

- First 3 digits → **Transaction type**
- Last 3 digits → **Account type**

Example:

csharp

CopyEdit

000000 → Purchase from default account

010000 → Balance Inquiry

200000 → Refund

✅ 7. What are common Response Codes (DE39)?

Code Meaning

Code	Meaning
00	Approved
05	Do Not Honor
91	Issuer Unavailable
12	Invalid Transaction
14	Invalid Card Number
54	Expired Card

✅ 8. What is the difference between 0100 and 0200 messages?

MTI	Purpose	Response MTI
0100	Authorization only	0110
0200	Financial + Auth	0210

💡 0200 = used when you want to do **auth + capture** in one step (like POS sale)

✅ 9. What is DE55? Why is it important in EMV?

- **DE55** = Encodes **EMV tags (TLVs)**
- Contains:
    - Cryptogram (ARQC/TC)
    - Unpredictable number
    - Terminal capabilities, etc.

Example (Hex dump):

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9F26 08 1234567890ABCDEF

9F27 01 80

9F10 07 06 01 1A A0 00 01

✅ Sent during ARQC → helps issuer validate transaction authenticity

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✅ 10. What is a Reversal (0420 message)?

- Used when a transaction **previously approved needs to be canceled**.
- Example reasons:
    - ARPC failed
    - Issuer approved, but card responded with AAC
    - Network timeout

MTI: 0420
Must include: DE37, DE90 (Original Data Elements)

✅ 11. What is Field 90 (Original Data Elements)?

Used in **reversal and advice messages** to refer to the **original transaction**.

Format:

scss

CopyEdit

MTI (4) + STAN (6) + Date (10) + Acquirer ID (11) + Forwarding ID (11)

✅ 12. What is the difference between STAN (DE11) and RRN (DE37)?

Field Purpose

DE11 STAN = Trace number (by terminal)

DE37 RRN = Retrieval reference (unique id)

- STAN is 6 digits; RRN is 12 characters (alphanumeric)

✅ 13. How is an ARQC message formed in ISO8583?

1. Terminal collects EMV data

2. Forms DE55 (EMV TLVs)

3. Builds ISO 8583 message:

    o   MTI = 0200

    o   DE2 = PAN

    o   DE3 = 000000

    o   DE4 = Amount

    o   DE55 = EMV data

✅ 14. What are network management messages (0800/0810)?

Used to maintain communication between host and terminal.

MTI Purpose

0800 Echo Test, Sign-on

0810 Response

Used for **keep-alive pings**, **key exchange**, and **initialization**

✅ **15. How can you debug an ISO 8583 transaction?**

Steps:

1. Look at **MTI**: What kind of message is it?

2. Decode the **bitmap** to know which DEs are present

3. Parse **important fields**:

    o DE2: PAN

    o DE4: Amount

    o DE39: Response

4. Check **DE55** if EMV transaction

5. Look for **DE90** if reversal

You can use tools like:

- Hex viewers

- TLV parsers

- ISO 8583 parsers

✅ **16. What is the purpose of Field 48 (Additional Data - Private)?**

- Field 48 is **custom-defined** and varies between networks or banks.

- It may include:

    o Biller IDs (in bill payments)

    o Loyalty/reward info

    o QR transaction metadata

📌 **Length:** Variable (LLLVAR or LLLLVAR)

✅ **17. What is Field 52 (PIN Data)? How is it encoded?**

- Field 52 contains the **encrypted PIN block**.

- Usually 8 bytes (hex-encoded), encrypted using the **ISO-0** or **ANSI X9.8** format with a shared PIN key.

Example:

pgsql

CopyEdit

52: 6E6B1C564C31A3FF (Encrypted using 3DES)

✅ **18. What is Field 53 (Security Related Control Information)?**

- Contains flags for PIN encryption method, MAC, key management

- Common format: 16 hex digits (8 bytes)

Example:

csharp

CopyEdit

53: 2600000000000000

26 = 3DES with PIN and MAC support

✅ **19. What is Field 54 (Additional Amounts)?**

- Contains cashback, tip, surcharge amounts

- Format is: CCYYAAAAMMM...

    o CC = Amount type code

    o YY = Currency code

    o AAAA = Amount

Used in **cash withdrawal + purchase** cases.

✅ **20. What is Field 62 used for?**

- Often used for:
    - Invoice numbers
    - Loyalty references
    - E-commerce tracking info

Format varies per switch or acquirer.

✅ 21. What are optional and mandatory fields in ISO 8583?

Type	Example Fields
Mandatory	MTI, Bitmap, DE2, DE3, DE4, DE11, DE41
Optional	DE22, DE35, DE55, DE61, DE63, DE102
Conditional	DE52 (if PIN used), DE38 (Auth code)

✅ 22. What are Subfields in ISO 8583?

- Some fields (like DE48, DE60, DE61) contain **structured subfields**.
- Example:

ini

CopyEdit

```
DE61 = 01|MERCHANT_TYPE|CITY|REFERENCE
```

✅ 23. What is a TLV in the context of ISO 8583?

- TLV = **Tag-Length-Value**, mostly used in EMV within **Field 55**.
- Each tag is a data element.
  Example:

scss

CopyEdit

```
Tag 9F26 (AC), Length 08, Value: 1234567890ABCDEF
```

→ 9F26 08 1234567890ABCDEF

✅ **24. What are composite fields?**

- Fields made of subcomponents, usually TLV-encoded (e.g., DE55 or DE48)

- Must be parsed carefully using **tag dictionary**

✅ **25. What is DE38 (Authorization ID Response)?**

- Returned by issuer in 0110 or 0210 response.

- 6-digit alphanumeric code

- Used to track approved transactions

✅ **26. Can we have multiple bitmaps in ISO 8583?**

Yes:

- **Primary bitmap**: fields 1–64

- **Secondary bitmap**: fields 65–128

- **Tertiary bitmap** (rare): fields 129–192

✅ **27. How do you identify the presence of secondary bitmap?**

- If **bit 1 (first bit of primary bitmap) = 1**, it means a **secondary bitmap** is present.

Example:

sql

CopyEdit

Primary Bitmap: F23C0000… → F = 1111 → First bit = 1 → Secondary bitmap is present

---

✅ **28. What's the difference between LVAR, LLVAR, and LLLVAR?**

Type	Length Field Size	Max Data Length
LVAR	1 digit	9
LLVAR	2 digits	99

Type   Length Field Size Max Data Length

LLLVAR 3 digits   999

📌 Used for variable-length fields like PAN, Track2, or private data.

✅ **29. What are settlement messages?**

Used by banks to settle batches at EOD.

- Common MTIs:
    - 0500 = Batch Data Capture
    - 0510 = Batch Response

Includes:

- DE2, DE4, DE12/13 (date), DE123 (POS info)

✅ **30. What is DE35 (Track 2 data)?**

- Contains magnetic stripe Track 2 info
- Format: PAN=ExpiryDateServiceCode...

Example:

makefile

CopyEdit

35: 4567123412341234=2503201123456789

✅ **31. What is the format of DE55 (EMV Tag Data)?**

- Contains multiple TLV entries

Example:

makefile

CopyEdit

DE55:

9F26 08 1234567890ABCDEF

9F27 01 80

9F10 07 06 01 1A A0 00 01

✅ **32. What is Field 70 used for?**

Used in **network management messages** (0800/0810) to specify function codes:

Code Meaning

001   Sign-on

002   Sign-off

301   Echo Test

✅ **33. What is the role of DE102 and DE103?**

- DE102 = Account Identification 1 (e.g., sender)

- DE103 = Account Identification 2 (e.g., receiver)
  Used in **fund transfer or wallet** operations.

✅ **34. What happens if an invalid bitmap is sent?**

- Receiving system may:

  - Drop the message

  - Return a parsing error

  - Send back DE39 = 30 (Format Error)

✅ **35. What is a duplicate message and how is it handled?**

- Same STAN + date + RRN

- Switch must have **duplicate detection logic**

- Commonly used field: **DE11 + DE7 + DE37**

✅ **36. How do you detect message tampering in ISO8583?**

- Use **MAC fields** (DE64 or DE128)

- Validate against computed MAC using the same session key

✅ 37. What is the use of DE93 and DE94?

Used in card-to-card transfer messages:

- DE93: Receiving Institution ID

- DE94: Sending Institution ID

✅ 38. What is a partial reversal?

- Only a portion of the authorized amount is reversed.

- Used in cases like partial cashback or failed top-ups.

✅ 39. What is advice and repeat advice?

- **Advice**: Informing host that transaction happened (MTI = 0220)

- **Repeat advice**: Re-sending if no response received (MTI = 0221)

✅ 40. What does Field 63 usually contain?

- Custom field used by banks

- Often holds response information, product codes, promo info, etc.

✅ 41. How is an ISO 8583 message validated at the switch or host?

The switch performs checks like:

- **MTI validity** (e.g., 0200/0420/0800)

- **Bitmap integrity**

- Mandatory **DE presence check**

- Field length and encoding (e.g., PAN must be numeric)

- Optional **MAC verification** (if DE64 or DE128 is present)

- **Duplicate check** using STAN (DE11) and Date-Time (DE7)

🛠️ **Failing any check leads to rejection**, with DE39 = 30 (format error) or DE39 = 94 (duplicate).

✅ **42. What is the use of DE62 (POS Data Code)?**

Used to carry:

- POS entry capabilities

- Terminal type

- EMV data presence flags

- Cardholder verification info

➡ Often used in **India/NPCI/RuPay** implementations.

Example:

makefile

CopyEdit

DE62: 0110000000000000

✅ **43. What does it mean when DE39 = 96?**

- **DE39 = 96** indicates a **System Malfunction**.

- Usually returned when the **host backend system crashes**, or a required dependency (e.g., key server, DB) fails.

🧠 Tip: During testing, simulate a malformed MAC or corrupt Field 55 to trigger a 96 response.

✅ **44. What is the format of an ISO 8583 reversal (0420) message?**

Key Fields:

- MTI = **0420**

- DE11 = Same STAN as original

- DE37 = Same RRN

- DE90 = **Original Data Elements**

- DE4 = Original Amount

- DE39 (Response) = Returned only in 0430 response

Example Flow:

csharp

CopyEdit

Original → 0200 with STAN 123456, RRN A1B2C3D4

Reversal → 0420 with same STAN/RRN, includes DE90

✅ 45. What is DE90 (Original Data Elements) format?

It uniquely identifies the **original message** being referenced (usually in reversals or chargebacks).

Format:

- Original MTI (4 digits)

- Original DE11 (6 digits)

- DE7 Date + Time (10 digits)

- Acquiring Institution ID (11 digits)

- Forwarding Institution ID (11 digits)

Example:

CopyEdit

02001234560601123456A1BANK00001SWITCH001

✅ 46. How are EMV tags encoded inside DE55?

DE55 uses **TLV format**:

- Each tag has:

  - **Tag ID** (1–3 bytes)

  - **Length** (1–2 bytes)

  - **Value**

Example:

makefile

CopyEdit

DE55:

9F26 08 AABBCCDDEEFF1122 → Application Cryptogram

9F27 01 80 → Cryptogram Info Data

9F10 07 06 01 1A A0 00 01 → Issuer App Data

✅ 47. What is DE28 (Transaction Fee Amount)?

This field is used to:

- Communicate **service charge, surcharge, or fee**
- Format: +000000001000 = ₹10.00 charge

Used mostly in **ATM and bill pay** networks.

✅ 48. What does DE18 (Merchant Category Code) represent?

- 4-digit code that identifies **type of merchant business**

Examples:

Code Merchant Type

5411 Grocery Stores

5812 Restaurants

6011 ATM/Financial Inst

🔒 Used for fraud detection, analytics, and limits enforcement.

✅ 49. What is the purpose of DE123 (POS Data Code)?

It provides:

- Cardholder present/not present
- Terminal capability
- Payment method (EMV, magnetic, contactless)

- Additional subfields

🔍 Commonly used in **e-commerce** and **unattended POS terminals**.

✅ **50. What is the role of DE43 (Card Acceptor Name/Location)?**

Field 43 contains:

- Merchant name

- City

- Country

📍 Format: Fixed 40 characters

arduino

CopyEdit

"FUNPLOSION STORE   HYDERABAD   IN"

It appears in:

- Transaction receipts

- Issuer host messages

- Settlement logs

✅ **51. What is DE12 and DE13 used for?**

These two fields capture **local terminal timestamp**:

Field Meaning	Format
DE12 Local Time (hhmmss)	6 digits
DE13 Local Date (MMDD)	4 digits

📌 These help for logging, reconciliation, and fraud tracking.

✅ **52. How is ISO 8583 used in UPI or mobile payments?**

While UPI is not directly ISO 8583, some **bank-host-to-bank-host messages** (or switch to bank) still use ISO 8583 for:

- **Reversals**

- **Error advice**

- **Settlement**

Example: BHIM POS device or UPI QR with card fallback.

✅ 53. What is a key exchange message in ISO 8583?

- MTI: 0800

- DE70 = 101 → Key exchange request

- Includes:

    o   Terminal ID (DE41)

    o   Encrypted keys (in private DEs like 53, 64, or 96)

Used for securely distributing:

- PIN keys

- MAC keys

- Session keys

✅ 54. How to handle network timeouts during ISO 8583 processing?

If no response from issuer:

1. Terminal waits for timeout (e.g., 10s)

2. Retry up to 2–3 times

3. If no response, perform:

    o   **Reversal (0420)** once response received later

    o   Or store transaction for **offline batch**

✅ 55. What are MTI 0220 and 0221 used for?

These are **Advice Messages**:

- 0220 = First advice (transaction already happened)

- 0221 = Repeat advice (if no response to 0220)

Used when:

- ARQC accepted
- ARPC failed
- Or reversal not possible

✅ 56. What is the typical length of a bitmap?

Bitmap Type	Length in Bits	Length in Hex
Primary Bitmap	64 bits	16 hex chars
Secondary Bitmap	64 bits	16 hex chars
Total (128-bit)	128 bits	32 hex chars

Bitmaps are usually represented in **hexadecimal**, e.g., F23C000000000000.

✅ 57. What happens if the bitmap has a bit set but no corresponding field value is sent?

This is a **format error**.

- Result: Receiver returns **DE39 = 30 (Format Error)**
- It's essential that:
  - Bitmap matches fields present
  - Field values are valid and well-formed

✅ 58. What is the difference between Field 2 and Field 35?

Field	Content	Use
DE2	PAN (Card Number)	Cardholder identity
DE35	Track 2 Data	Includes PAN + expiry + service code, encrypted or masked

In EMV, DE2 may be used, but **DE35 is often required** for fallback and magstripe.

✅ 59. What is DE14 and how is it validated?

- DE14 = **Card Expiry Date** (MMYY)
- Host or switch compares it with:
  - Current date (system time)
  - For expiry check before approving

Example:

yaml

CopyEdit

DE14 = 0625 → Expiry: June 2025

✅ **60. What is the purpose of DE19?**

- **Acquiring Country Code**
- 3-digit ISO country code of terminal

Examples:

- 356 = India
- 840 = USA

Used for:

- Geo blocking
- Merchant profiling
- Analytics

✅ **61. What is the use of Field 44 (Additional Response Data)?**

Used by the host to send:

- Card status info
- Risk response
- Extra advice (especially in declines)

It's a free text or TLV-formatted field.

✅ **62. What is a STIP transaction?**

STIP = Stand-In Processing

Used when:

- Issuer is unavailable

- Network (like Visa/Mastercard) decides using rules:

  - Amount limits

  - Velocity checks

  - BIN profiles

MTI remains 0100/0200 → Network replies with 0110/0210 without issuer contact.

✅ 63. What is Field 25?

- **POS Condition Code**

- Indicates if terminal is ATM, POS, unattended, fallback, etc.

Examples:

- 00 = Normal

- 06 = Fallback

- 08 = Mail/Phone Order

✅ 64. What is the significance of DE26 (PIN capture code)?

- Specifies the **PIN block format** or number of PIN digits terminal can accept.

Example:

ini

CopyEdit

DE26 = 06 → Supports 6-digit PIN

✅ 65. What is fallback in ISO 8583?

When EMV fails (chip unreadable), terminal may:

- Use magnetic stripe (Track 2)

- Set DE22 = 90X (magstripe fallback)

- Include fallback indicators in DE60 or DE61

Fallback is **risky**, so usually discouraged unless truly required.

✅ 66. What is Field 65–128 used for?

These are **secondary bitmap fields**, rarely used in POS but more common in:

- Host-to-host messages
- Settlement
- Private fields (e.g., DE90, DE100)

Example:

- DE100 = Receiving Institution ID
- DE123 = POS data code

✅ 67. What is Field 7 (Transmission Date & Time)?

- MMDDhhmmss format (10 digits)
- Represents **UTC or local time**
- Used for:
  - Duplicate checking
  - Logging
  - Timeout tracking

✅ 68. How does a terminal detect message rejection?

By checking:

- **DE39** response code in 0110/0210
  - E.g., 05 = Do Not Honor
  - 91 = Issuer Unavailable
  - 54 = Expired Card

Terminal then:

- Prints declined receipt

- Optionally retries or reverses

✅ 69. What is an offline transaction in ISO 8583?

Some EMV terminals are configured to:

- Approve transaction **without online**

- Generate **TC (Transaction Certificate)** locally

- Send 0320 batch capture later

Field 55 includes TC; host logs it as completed offline.

✅ 70. What is the use of Field 66 (Settlement Code)?

- Used in MTI 0500/0510 messages

- Indicates:

    o End-of-day batch

    o Shift-wise capture

    o Auto/manual batch closing

Example:

- 0 = Manual

- 1 = Auto

- 2 = EOD only

✅ 71. What is a chargeback message in ISO 8583?

- MTI = 0420 or special code (like 1240 in some systems)

- Reverses previously settled transaction

- Requires DE90 + DE95 + DE38

Usually initiated by the **issuer or scheme** due to customer dispute.

✅ 72. What is Field 73 (Action Date)?

- Used in settlement messages

- Format: MMDD (like DE13)

- Indicates **expected clearing/settlement day**

✅ **73. What happens when DE55 is not properly encoded?**

- EMV-capable hosts will reject

- Response = **DE39 = 30 or 96**

- Field 55 must follow:

    o TLV encoding

    o Valid tags

    o Proper lengths

✅ **74. Can ISO 8583 carry binary data?**

Yes, in fields like:

- DE52 (PIN Block)

- DE64 (MAC)

- DE55 (EMV tags)
  Must be **binary-safe and length-prefixed**.

✅ **75. What is Field 93 and 94 used for?**

Used in **fund transfers or host routing**:

- DE93 = Receiving Institution ID Code

- DE94 = Sending Institution ID Code

These help in directing funds across banks or hosts.

✅ **76. How is a partial approval handled in ISO 8583?**

When the issuer allows only part of the requested amount:

- **DE4 (Amount)** → reflects **approved** value

- **DE123** or **Field 63** → may include "Partial Approved" flag

- POS terminal displays the remaining amount to customer for other payment method

🛒 Example: Wallet ₹50 + Card ₹50 → Transaction for ₹100 partially approved for ₹50.

✅ 77. What is the structure of the Authorization Response (0110)?

Includes:

- DE39 = Response Code (00 for success)

- DE38 = Auth Code

- DE55 = Optional EMV response data (ARPC)

- DE44 = Additional Response Data

- DE54 = Cash back, surcharge (if applicable)

✅ 78. How do field tags in Field 55 impact transaction approval?

Issuer uses:

- 9F26: Application Cryptogram

- 9F10: Issuer Application Data

- 9F36: Application Transaction Counter

If invalid or missing → declines with DE39 = 6A, 05, or 96

✅ 79. What are bit 0 and bit 1 in the bitmap used for?

Bit   Meaning

Bit 1 Secondary bitmap present

Bit 0 (Not used — MTI starts at offset 0)

Bit 1 = 1 → secondary bitmap follows immediately after primary bitmap.

✅ 80. What is DE32 and DE33 used for?

Field Description

DE32 Acquiring Institution ID

DE33 Forwarding Institution ID

These help **route** the message through acquiring/forwarding entities in multi-host or multi-switch networks.

✅ 81. What's the role of Field 31 (Acquirer Reference Data)?

Used to carry:

- Acquirer-specific info

- Tags related to fraud checks, risk scores

Usually appears in **network clearing** or **risk assessment messages**.

✅ 82. What happens when the MAC (DE64) verification fails?

- The message is rejected with:

  - **DE39 = 96** (System Malfunction)

  - Or **DE39 = 30** (Format Error)

- Some networks may respond with a **decline** if MAC check fails silently

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✅ 83. Can you send a financial message (0200) without prior authorization (0100)?

Yes, for most **POS purchase transactions**, 0200 is **authorization + financial** in one step.

However, for high-risk or pre-auth models:

- 0100 → Authorization

- 0200 → Later sent for capture

✅ 84. How is a refund represented in ISO 8583?

- MTI = 0200

- DE3 (Processing Code) = 200000 or 220000 (refund)

- DE4 = Refund Amount

- DE60 = May include original reference

Example use case: Transaction cancelled and funds returned to customer.

✅ 85. What is the difference between STAN (DE11) and Retrieval Ref (DE37)?

Field Purpose

DE11 6-digit trace number (terminal generated)

DE37 12-char RRN (host-unique retrieval ref)

Both are used for logging, reversals, reconciliation.

✅ 86. What is a batch upload (MTI 0320 or 0500)?

Used when:

- Terminal is offline

- Sends multiple approved transactions later to host

MTI = 0320 (Offline)
MTI = 0500 (Settlement)

Each message contains:

- DE2, DE4, DE11, DE12/13, DE55 (EMV TC data)

✅ 87. How do issuers detect duplicate messages?

Using combination of:

- DE11 (STAN)

- DE7 (Transmission Date & Time)

- DE37 (RRN)

Switch or issuer maintains a short-term **cache or database** of recent STANs to reject duplicates.

✅ 88. Can ISO 8583 be extended with proprietary fields?

Yes:

- Use DE48, DE60–DE63

- Many countries (India, China, EU) have **custom formats** built on top of ISO 8583

Example:

json

CopyEdit

DE48: | loyaltyPoints=2000 | promoCode=FEST2025

✅ 89. How does a fallback EMV transaction appear in ISO 8583?

- DE22 = 90X (indicates fallback)

- DE35 used (Track 2), DE55 may be absent

- Terminal sets fallback flag in private fields (DE61, DE60)

Issuer may reject if fallback not allowed for BIN.

✅ 90. What is DE95 (Replacement Amount)?

Used for:

- Chargebacks

- Reversals

It shows:

- Replaced amount (if any)

- Currency

- Reason code

Usually only used in **clearing and disputes**.

✅ 91. How are contactless transactions handled in ISO 8583?

Same as chip (EMV) transaction:

- DE55 includes ARQC from contactless card

- DE22 indicates contactless mode

- Fields identical to chip card unless terminal uses EMV kernel light

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✅ 92. What are common error codes in DE39?

Code Meaning

Code	Meaning
00	Approved
05	Do Not Honor
12	Invalid Transaction
13	Invalid Amount
14	Invalid Card Number
30	Format Error
54	Expired Card
91	Issuer Unavailable
96	System Malfunction

✅ 93. How is a PIN retry failure represented?

- DE39 = 55 (Incorrect PIN)
- Terminal allows 2–3 retries before blocking card
- Field 44 or Field 48 may include message:
    - "PIN tries exceeded"

✅ 94. Can a transaction succeed if ARPC validation fails?

- If terminal receives a bad ARPC → may decline locally
- Else, force accept (based on issuer config)
- Such transactions are marked "high-risk" and often **reversed**

✅ 95. What is a deferred debit transaction?

It means:

- The transaction is **approved now**

- Funds are **debited later** (batch or settlement time)

Common in:

- Utility payments

- Metro cards

- Airline ticket bookings

✅ 96. What does the EMV Tag 9F34 represent?

- CVM (Cardholder Verification Method) Results

Format: 3 bytes, showing what kind of verification was done.

Example:

makefile

CopyEdit

9F34: 420301

→ PIN Verified Offline

✅ 97. How does ISO 8583 support QR payments?

Via:

- DE48 or DE60: QR string

- DE61: QR code metadata

- EMV tags in DE55

Example:

- Bharat QR

- MC QR (Mastercard)

- Visa QR (mVisa)

✅ 98. How does a tokenized PAN appear in ISO 8583?

- DE2 = Token PAN

- DE35 = Token Track 2

- DE48/DE61/DE103 → may carry token metadata (token source, original PAN last 4, etc.)

✅ **99. What is the typical format of MAC in DE64?**

- 8 bytes (16 hex characters)

- Encrypted using DES/3DES with session key

- Based on message from MTI up to field before MAC

Example:

makefile

CopyEdit

DE64: A1B2C3D4E5F6A7B8

✅ **100. Can ISO 8583 be used over HTTP/REST?**

Yes, though uncommon.

- Message is packed as a binary or hex payload

- Sent as application/octet-stream in body

- Some gateways wrap 8583 message in a JSON envelope for testing

🌐 But traditionally, 8583 runs over **TCP, X.25, or ISO-on-SSL sockets**