# BICSI ITS Technician Training Manual

Personal-use study workbook (pressure rounds • wording drills • flashcards • mock exams)

## How to Use This Manual

1. Train 3×/week for 20–25 minutes: (A) Pressure Round, (B) Wording Lab, (C) Mixed Review.
2. Score each session: Concept (what's correct), Hierarchy (most appropriate / first step), Wording (BICSI-style language).
3. After any miss: write one "inspection report" sentence using a Power Phrase (listed assembly, manufacturer minimum bend radius, minimize impedance, limit future expansion, shock hazard).
4. Monthly: take a timed mock exam and review the misses list.

## Technician Power Phrases

- listed fire-resistance-rated assembly
- manufacturer's minimum bend radius
- inspect → clean → inspect → mate (fiber)
- minimize impedance (bonding conductors short/straight)
- limit future expansion (pathway fill)
- reduce potential shock hazards (bonding purpose)
- maintain resiliency / prevent single point of failure (A/B pathways)

## Precision Values & Quick Facts

| | |
|---|---|
| UTP pair untwist at termination (typical best practice) | 13 mm (0.5 in) max |
| Conduit fill (typical max without derating, commonly tested) | 40% |
| UTP pulling tension (typical best practice) | 25 lbf |
| Fiber connection sequence | Inspect → Clean → Inspect → Mate |
| Why separate redundant pathways | Resiliency; avoid single point of failure |
| Why keep bonding conductors short/straight | Minimize impedance; improve fault/surge performance |
| Cable tray overfill primary concern | Limits future expansion & accessibility; increases mechani |
| OSHA fall protection (commonly tested) | 6 ft |

# Practice Question Bank (Sample Set)

Use these for weekly pressure rounds. Answers are on the next page.

1. **[Bonding & Grounding]** Primary purpose of bonding in a telecommunications system is to:

- A. Provide a path for normal current flow
- B. Equalize potential between conductive components to reduce shock hazards
- C. Increase signal strength
- D. Reduce crosstalk

2. **[Bonding & Grounding]** A rack is bonded but the bonding lug is installed over painted metal. MOST appropriate action:

- A. Add a star washer only
- B. Remove paint to ensure metal-to-metal contact and reinstall the connection
- C. Increase conductor length
- D. Do nothing if continuity reads OK

3. **[Bonding & Grounding]** TMGB is best described as:

- A. A busbar in a work area
- B. Primary telecommunications grounding busbar bonded to the building grounding electrode system
- C. A splice enclosure for OSP fiber
- D. A type of patch panel

4. **[Bonding & Grounding]** TBB is used to:

- A. Interconnect TGBs to the TMGB (telecommunications bonding backbone)
- B. Terminate horizontal copper pairs
- C. Improve airflow
- D. Measure insertion loss

5. **[Fiber]** Correct sequence before mating fiber connectors:

- A. Clean → Inspect → Mate
- B. Inspect → Clean → Inspect → Mate
- C. Inspect → Mate → Clean
- D. Mate → Clean → Inspect

6. **[Fiber]** High reflectance with minimal insertion loss on OTDR most commonly indicates:

- A. Excessive length
- B. Dirty/poorly polished connector interface
- C. Macro-bend mid-span
- D. Wrong fiber type

7. **[Fiber]** A link passes at 1310 nm but fails at 1550 nm. MOST likely cause:

- A. Copper impedance mismatch
- B. Macro-bending or stress point
- C. Excessive NEXT
- D. Incorrect pinout

8. **[Fiber]** Microbending primarily increases:

- A. Reflectance
- B. Attenuation (loss)
- C. Crosstalk
- D. Return loss on copper

9. **[Pathways & Spaces]** Primary concern when cable tray fill exceeds recommended capacity:

- A. Overheating of fiber
- B. Limits future expansion and reduces accessibility

- C. Improves EMI performance
- D. Eliminates need for slack

10. **[Pathways & Spaces]** Typical maximum conduit fill without derating (commonly tested):

- A. 20%
- B. 40%
- C. 60%
- D. 80%

11. **[Firestopping]** Primary purpose of firestopping a penetration is to:

- A. Improve cooling
- B. Maintain fire-resistance rating by restoring compartmentalization of a listed assembly
- C. Bond the sleeve
- D. Reduce attenuation

12. **[Firestopping]** Cables added later without following listed re-entry procedures means:

- A. No impact if sealant remains
- B. Listed fire-resistance-rated assembly is compromised and may fail inspection
- C. Improved smoke control
- D. Only documentation is required

13. **[Testing]** Which instrument is used to measure fiber insertion loss end-to-end:

- A. OTDR only
- B. OLTS (light source + power meter)
- C. Toner and probe
- D. Wiremap

14. **[Testing]** OTDR is best used to:

- A. Measure copper crosstalk
- B. Locate events and estimate distance/loss by backscatter
- C. Terminate pairs
- D. Measure conduit fill

15. **[Data Centers]** Why must A/B redundant pathways be physically separated:

- A. To reduce bend radius
- B. To prevent a single incident from impacting both (avoid single point of failure)
- C. To improve connector polish
- D. To reduce pair untwist

16. **[Data Centers]** Missing blanking panels in populated racks primarily causes:

- A. EMI
- B. Airflow mixing (hot/cold bypass) and reduced cooling efficiency
- C. Higher reflectance
- D. Ground faults

17. **[Safety]** OSHA fall protection is commonly tested at:

- A. 4 ft
- B. 6 ft
- C. 10 ft
- D. 12 ft

18. **[Copper]** Maximum pair untwist at UTP termination (typical best practice):

- A. 13 mm (0.5 in)
- B. 76 mm (3 in)
- C. 152 mm (6 in)
- D. No limit

19. **[Copper]** Exceeding copper pulling tension most commonly risks:

- A. Improved performance
- B. Damage to conductor geometry and degraded electrical performance
- C. Higher reflectance
- D. Better NEXT

## Answer Key (Sample Set)

1. B — Equalize potential between conductive components to reduce shock hazards
2. B — Remove paint to ensure metal-to-metal contact and reinstall the connection
3. B — Primary telecommunications grounding busbar bonded to the building grounding electrode system
4. A — Interconnect TGBs to the TMGB (telecommunications bonding backbone)
5. B — Inspect → Clean → Inspect → Mate
6. B — Dirty/poorly polished connector interface
7. B — Macro-bending or stress point
8. B — Attenuation (loss)
9. B — Limits future expansion and reduces accessibility
10. B — 40%
11. B — Maintain fire-resistance rating by restoring compartmentalization of a listed assembly
12. B — Listed fire-resistance-rated assembly is compromised and may fail inspection
13. B — OLTS (light source + power meter)
14. B — Locate events and estimate distance/loss by backscatter
15. B — To prevent a single incident from impacting both (avoid single point of failure)
16. B — Airflow mixing (hot/cold bypass) and reduced cooling efficiency
17. B — 6 ft
18. A — 13 mm (0.5 in)
19. B — Damage to conductor geometry and degraded electrical performance