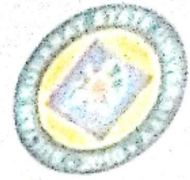


Republic of the Philippines
SULTAN KUDARAT STATE UNIVERSITY



College of Industrial Technology
MIDTERM EXAM IN DT 312
ELECTRICAL, ELECTRONICS, PLUMBING AND SANITATION LAYOUT
FOR BINDTECH- DRAFTING TECH.3
2ND Semester, S.Y. 2025 – 2026

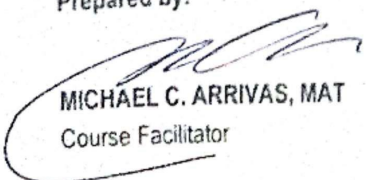
Instruction: Read each question carefully and select the correct answer. Use the answer sheet for your answers.

1. Which symbol represents a single-pole switch in Philippine electrical diagrams?
 - A. Circle with dot
 - B. Break in line with diagonal slash
 - C. Rectangle with lever
 - D. Two parallel lines
2. What is the standard household voltage in the Philippines?
 - A. 120V, 60Hz
 - B. 240V, 50Hz
 - C. 220V, 60Hz
 - D. 110V, 50Hz
3. What does GFCI stand for?
 - A. Ground Flow Current Indicator
 - B. General Function Circuit Indicator
 - C. Ground Fault Circuit Interrupter
 - D. General Fuse Control Input
4. Which panel distributes electricity to circuits within a building?
 - A. Motor control
 - B. Main Distribution Panel
 - C. Junction box
 - D. Sub-panel
5. Which conductor is symbolized by a line with three descending lines?
 - A. Neutral wire
 - B. Ground wire
 - C. Hot wire
 - D. Conduit
6. Why are GFCI outlets required in bathrooms and kitchens?
 - A. To protect against electrical shock
 - B. To improve lighting
 - C. To reduce power consumption
 - D. To increase voltage supply
7. Why must conduits have limited bends ($\leq 360^\circ$)?
 - A. To save conduit cost
 - B. For aesthetic reasons
 - C. To reduce grounding needs
 - D. To make wire pulling easier
8. Why is grounding necessary in electrical systems?
 - A. To safely discharge fault current
 - B. To save energy
 - C. For additional load capacity
 - D. To eliminate circuit breakers
9. Why are copper wires preferred in residential wiring?
 - A. They have better conductivity and durability
 - B. They are more flexible
 - C. They are fireproof
 - D. They are cheaper than aluminum
10. Why are three-way switches common in staircases?
 - A. To control lights from two locations
 - B. To save energy
 - C. For aesthetics
 - D. To reduce wire usage
11. A house needs outlets every 3 meters along walls. Which code is this requirement based on?
 - A. NEC
 - B. OSHA
 - C. IEC
 - D. PEC
12. A building has a load of 20 kW. Which code provides the correct panel rating and breaker sizing?
 - A. Fire Code
 - B. Philippine Electrical Code
 - C. OSHA
 - D. National Building Code only
13. If a classroom requires 220V appliances, which outlet should be installed?
 - A. Weatherproof only
 - B. GFCI
 - C. Two-prong
 - D. Three-prong 220V
14. A technician uses a sweep bend in a conduit run. What is the purpose?
 - A. To beautify design
 - B. To support outlet placement
 - C. To reduce wire pulling difficulty
 - D. To lower grounding

- If a factory uses 3-phase motors, which outlet type is required?
- GFCI
 - Heavy-duty 3-phase
 - Two-prong
 - Standard residential
16. A homeowner installed outlets without GFCI in the bathroom. What risk does this pose?
- Fire hazard only
 - Higher energy bill
 - Electric shock hazard
 - Poor lighting
17. If lights flicker when large appliances run, what is the likely issue?
- Proper grounding
 - Overloaded circuits
 - Proper conductor size
 - Proper breaker size
18. A conduit run sags because clamps were placed every 3 meters. Which rule was violated?
- Breaker sizing
 - PEC spacing requirement
 - Load calculation
 - Voltage rating
19. A commercial office has emergency lights missing. Which compliance is lacking?
- PEC
 - Energy Code
 - Fire Safety Code
 - Plumbing Code
20. Which is the MOST important factor in choosing breaker size?
- Wire color
 - Continuous load rating
 - Appliance brand
 - Conduit size
21. Which electrical design decision best ensures energy efficiency?
- Installing incandescent bulbs
 - Avoiding grounding
 - Using LED lighting
 - Oversizing breakers
22. Which factor is MOST critical when submitting electrical plans to LGU?
- Compliance with PEC
 - Wall color
 - Teacher preference
 - Number of outlets
23. You are tasked to design a residential layout. What is the FIRST step?
- Install breakers
 - Load calculation
 - Submit inspection
 - Buy materials
24. How would you redesign outlets in a wet area to ensure safety?
- Use extension cords
 - Use GFCI outlets
 - Use two-prong
 - Install none
25. A company wants an energy-efficient layout. What innovation should you add?
- Random placements
 - LED fixtures and energy-saving layouts
 - Incandescent bulbs
 - Overloaded outlets
26. What does a dashed line represent in plumbing blueprints?
- Vent pipe
 - Water supply pipe
 - Drainage pipe
 - Fixture symbol
27. What symbol is used for a Water Closet (WC)?
- U-shaped trap
 - Circle with "WC"
 - Arrow
 - Rectangle with faucet
28. What is the function of a P-trap?
- Prevent sewer gases from entering
 - Store wastewater
 - Increase pressure
 - Collect stormwater
29. What does a cleanout provide?
- Extra water flow
 - Access for clearing blockages
 - Venting
 - Additional drainage
30. Which fixture requires a minimum 100 mm soil pipe?
- Kitchen sink
 - Shower
 - Water Closet
 - Lavatory sink
31. Why are vent pipes required in plumbing?
- To reduce slope requirements
 - To clean pipes
 - To prevent siphoning of traps
 - To increase water speed
32. Why must stormwater and sanitary drains be separated?
- To increase water pressure
 - To minimize fixture spacing
 - To reduce cross-contamination and system overload
 - To reduce pipe diameter
33. Why is pipe slope critical in drainage design?
- Improves aesthetics
 - Minimizes venting
 - Ensures gravity flow and prevents clogging
 - Reduces pipe material cost
34. Why are valves installed near fixtures?
- To trap air
 - To reduce pipe slope
 - To store water
 - To isolate flow for maintenance

- Why must toilets have minimum clearance (60 cm from center)?
- For accessibility and comfort
 - To save water
 - To minimize pipe size
 - To reduce venting
36. A plumber installs a G.I. pipe for outdoor exposure. Why is this correct?
- It avoids venting
 - It eliminates slope
 - It is cheaper
 - It resists mechanical damage
37. If a sink requires 15 mm pipe, which supply line size should be used?
- 15 mm
 - 25 mm
 - 100 mm
 - 10 mm
38. A plumber groups bathroom fixtures close together. What principle is followed?
- Aesthetic design only
 - Minimize pipe runs and simplify venting
 - Increase cost
 - Increase slope
39. If grease causes clogs in the kitchen sink, what is the best preventive design?
- Larger waste pipe (50–75 mm)
 - Shared vent
 - Reduced slope
 - Use storm drain
40. If a roof drain is connected to sanitary drainage, what problem may occur?
- Reduced slope
 - System overload and backflow
 - Increased water supply
 - Stronger venting
41. If a trap is dry, what will most likely happen?
- Sewer gases enter the building
 - Faster water flow
 - Lower pressure
 - Reduced drainage
42. A plumber notices constant blockages in long runs. What is likely missing?
- Valves
 - Cleanouts
 - Slope
 - Fixtures
43. If fixtures gurgle when draining, what system fault is indicated?
- Oversized pipe
 - Poor venting
 - Strong slope
 - Excess water supply
44. A plumber installs a toilet using a 50 mm waste pipe. What error is made?
- Fixture clearance wrong
 - Pipe size is too small
 - Vent pipe missing
 - Wrong slope
45. Which factor BEST indicates proper water supply system design?
- Adequate pressure and flow at all fixtures
 - Small pipe diameters
 - Long pipe runs
 - Lack of valves
46. Which material is BEST for sanitary drainage pipes in Philippine homes?
- Lead
 - Rubber
 - Copper
 - PVC/UPVC
47. Which factor is MOST critical for plumbing safety?
- Compliance with Philippine Plumbing Code
 - Many fixtures
 - Large pipes
 - High water meter reading
48. If you were designing a bathroom, what should you do FIRST?
- Place only a sink
 - Skip water supply
 - Install vent pipes randomly
 - Identify fixture layout
49. How can stormwater drainage be improved in flood-prone areas?
- Connect to toilets
 - Reduce venting
 - Minimize slope
 - Add gutters and soak pits
50. If designing a new plumbing system for a house, which innovation would improve efficiency?
- Use oversized soil pipes only
 - Eliminate traps
 - Use water-saving fixtures and proper pipe sizing
 - Share vent and drain pipes

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