C+++

**✅ MCQs: Stages of C++ Compilation and Execution**

**1. Which stage replaces macros and includes header files?**

1. Compilation
2. Preprocessing
3. Linking
4. Execution

**✅ Answer: 2. Preprocessing**  
**Explanation:** Preprocessing handles #include, #define, and conditional compilation.

**2. What is the output of the compiler stage?**

1. Object code
2. Executable file
3. Preprocessed source code
4. Assembly code

**✅ Answer: 4. Assembly code**  
**Explanation:** The compiler converts high-level code into assembly instructions.

**3. Which tool combines multiple object files into a single executable?**

1. Preprocessor
2. Assembler
3. Linker
4. Compiler

**✅ Answer: 3. Linker**  
**Explanation:** The linker combines object files and resolves external symbols.

**4. If a function is declared but not defined, what type of error occurs?**

1. Syntax error
2. Preprocessing error
3. Linker error
4. Runtime error

**✅ Answer: 3. Linker error**  
**Explanation:** The linker cannot find the actual definition during symbol resolution.

**5. What file extension typically represents an object file in C++ on Windows?**

1. .cpp
2. .obj
3. .exe
4. .s

**✅ Answer: 2. .obj**  
**Explanation:** Windows systems use .obj for object files.

**6. What is the role of the assembler in the build process?**

1. Optimize the code
2. Translate to assembly
3. Translate to machine code
4. Resolve external references

**✅ Answer: 3. Translate to machine code**  
**Explanation:** The assembler converts assembly code to machine-readable binary.

**7. Which of the following is NOT handled during preprocessing?**

1. Removing comments
2. Checking syntax
3. Including headers
4. Expanding macros

**✅ Answer: 2. Checking syntax**  
**Explanation:** Syntax checking happens during compilation.

**8. The .exe file is produced after which stage?**

1. Compilation
2. Assembly
3. Linking
4. Execution

**✅ Answer: 3. Linking**  
**Explanation:** The linker produces the final executable file.

**9. What will happen if main() is missing from the program?**

1. Preprocessor error
2. Compiler error
3. Linker error
4. Runtime error

**✅ Answer: 3. Linker error**  
**Explanation:** The linker looks for the entry point main() and fails if it’s not found.

**10. What is the correct sequence of stages from source to execution?**

1. Preprocessing → Linking → Compilation → Execution
2. Compilation → Preprocessing → Assembly → Linking → Execution
3. Preprocessing → Compilation → Assembly → Linking → Execution
4. Preprocessing → Compilation → Linking → Assembly → Execution

**✅ Answer: 3. Preprocessing → Compilation → Assembly → Linking → Execution**

**11. Which file contains the translated binary but is not yet executable?**

1. .cpp
2. .exe
3. .o or .obj
4. .i

**✅ Answer: 3. .o or .obj**  
**Explanation:** Object files are machine code but not fully linked.

**12. Where are function calls resolved to actual addresses?**

1. Compilation
2. Linking
3. Execution
4. Preprocessing

**✅ Answer: 2. Linking**  
**Explanation:** The linker connects function calls with their definitions.

**13. What happens during execution?**

1. Header files are included
2. Code is optimized
3. Code is converted to binary
4. Program runs and produces output

**✅ Answer: 4. Program runs and produces output**

**14. If a header file is missing, in which stage will the error occur?**

1. Preprocessing
2. Compilation
3. Linking
4. Execution

**✅ Answer: 1. Preprocessing**

**15. What is the input to the assembler stage?**

1. .cpp file
2. .i file
3. .s file
4. .exe file

**✅ Answer: 3. .s file**  
**Explanation:** The compiler generates .s assembly code, which is the input to the assembler.