

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) The delivery of a typical building project, as described in this text, may be divided into
A) two phases. B) three phases. C) four phases. D) five phases. E) six phases.

Answer: D

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 2) Establishing the project's economic feasibility and its overall budget is part of the design phase of the project.

Answer: True ☒ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 3) The term MEP is an acronym for
A) mechanical, electrical, and plumbing.
B) mechanical and electrical plans.
C) municipal emergency plan.
D) mechanical, electrical, and piping.
E) mechanical and electrical plant.

Answer: A

- 4) The program for a building project is prepared by the
A) architect.
B) building official of the city.
C) general contractor.
D) owner.
E) all of the above collectively.

Answer: D

- 5) In a typical building project, the coordination of the building's design is done by the
A) general contractor.
B) owner.
C) architect.
D) building official of the city.
E) any one of the above, depending on the type of building.

Answer: C

- 6) The construction drawings of a building project are prepared during the
A) DD stage of the project.
B) CD stage of the project.
C) preconstruction phase of the project.
D) SD stage of the project.
E) construction phase of the project.

Answer: B

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 7) The construction drawings of a building project are drawings that the architect uses to explain the design to the owner.

Answer: True ☒ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 8) The construction drawings of a building project are generally in the form of
- A) freehand sketches.
 - B) three-dimensional drawings.
 - C) photographs of three-dimensional scale model(s).
 - D) two-dimensional plans, elevations, sections, and details.
 - E) all of the above.

Answer: D

- 9) The construction drawings for a building project generally consist of
- A) architectural drawings, structural drawings, and MEP drawings.
 - B) architectural drawings and structural drawings.
 - C) architectural drawings, structural drawings, MEP, and QSA drawings.
 - D) architectural drawings, structural drawings, and QSA drawings.
 - E) none of the above.

Answer: A

- 10) The construction document set consists of
- A) construction drawings, construction schedule, and owner-contractor agreement.
 - B) construction drawings.
 - C) construction drawings and construction schedule.
 - D) construction drawings and specifications.
 - E) construction drawings, construction schedule, and specifications.

Answer: D

- 11) The specifications of a typical building project are prepared by the
- A) architect in collaboration with the GC and the architect's consultants.
 - B) architect.
 - C) architect and the architect's consultants.
 - D) architect in collaboration with the GC.
 - E) none of the above.

Answer: C

- 12) MasterFormat has been developed by the
- A) Associated General Contractors of America.
 - B) American National Standards Institute.
 - C) American Institute of Architects.
 - D) Construction Specifications Institute.
 - E) American Society for Testing and Materials.

Answer: D

13) MasterFormat consists of

- A) 20 divisions.
- B) 30 divisions.
- C) 40 divisions.
- D) 50 divisions.
- E) none of the above.

Answer: D

14) In MasterFormat, Division 02 refers to

- A) Procurement and Contracting Requirements.
- B) Masonry.
- C) Metals.
- D) General Requirements.
- E) none of the above.

Answer: E

15) In MasterFormat, Division 04 refers to

- A) General Requirements.
- B) Metals.
- C) Existing Conditions.
- D) Masonry.
- E) none of the above.

Answer: D

16) In MasterFormat, windows are part of

- A) Division 06.
- B) Division 05.
- C) Division 07.
- D) Division 04.
- E) none of the above.

Answer: E

17) In MasterFormat, roofing is part of

- A) Division 10.
- B) Division 07.
- C) Division 08.
- D) Division 11.
- E) Division 09.

Answer: B

18) In MasterFormat, flooring is part of

- A) Division 07.
- B) Division 08.
- C) Division 09.
- D) Division 05.
- E) Division 06.

Answer: C

19) Who is responsible for ensuring the safety of workers on the construction site of a typical building project?

- A) The general contractor
- B) The structural engineer
- C) Occupation Safety and Health Administration of the U.S. Government
- D) The architect
- E) All of the above collectively

Answer: A

20) The bidding documents include

- A) construction drawings, specifications, addenda, and contract modifications.
- B) construction drawings, specifications, and addenda.
- C) construction drawings and specifications.
- D) construction drawings.
- E) none of the above.

Answer: B

21) A contract document set consists of

- A) construction drawings, specifications, and addenda.
- B) construction drawings.
- C) construction drawings and specifications.
- D) construction drawings, specifications, addenda, and contract modifications.
- E) none of the above.

Answer: D

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

22) The project manual includes the project's construction drawings.

Answer: True ☒ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

23) The surety bonds used in a typical construction contract are

- A) bid bond, performance bond, and payment bond.
- B) bid bond, contract award bond, and completion bond.
- C) bid bond, performance bond, and completion bond.
- D) prescreening bond, award bond, and completion bond.
- E) none of the above.

Answer: A

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

24) All required surety bonds must be provided by the GCs who are bidding for the project, along with their bids, that is, at the time of bidding.

Answer: True ☒ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

25) The owner is required to provide payment bond to the GC whose bid has been accepted

- A) when the owner gives the notice to GC to proceed with the work.
- B) within one week of the GC commencing construction.
- C) when the GC provides performance bond to the owner.
- D) at the time of executing the owner - GC agreement.
- E) none of the above.

Answer: E

- 26) A GC would usually require performance bond from
- A) the architect.
 - B) each major subcontractor.
 - C) the owner and the architect.
 - D) the owner, architect, and the consultants.
 - E) the owner.

Answer: B

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 27) Where the owner is sufficiently familiar and confident of the financial and contractual capabilities of the GCs bidding for the project, the owner may not require the bid bond. This reduces the total cost of construction.

Answer: ☒ True ☐ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 28) Of the various project delivery methods described in the text, the oldest method is
- A) design-bid-build (DBB) method.
 - B) integrated project delivery (IPD) method.
 - C) design-build method (DB) method.
 - D) design-negotiate-build (DNB) method.
 - E) construction manager at risk (CMAR) method.

Answer: A

- 29) The shop drawings are prepared by the
- A) structural engineer.
 - B) architect.
 - C) MEP engineer.
 - D) all of the above.
 - E) none of the above.

Answer: E

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 30) Shop drawings are prepared during the design phase of the project.

Answer: ☐ True ☒ False

- 31) The primary purpose of a mockup is to establish the quality of materials and workmanship involved in constructing important components of the building by which the completed components will be judged.

Answer: ☒ True ☐ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 32) The day-to-day supervision of construction is the responsibility of the
- | | |
|-----------------------------|-----------------------------------|
| A) architect's consultants. | B) architect. |
| C) GC. | D) collectively of all the above. |

Answer: C

- 33) Who is typically responsible for obtaining the certificate of occupancy from the local jurisdiction?

A) Owner	B) GC	C) Architect
----------	-------	--------------

Answer: B

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

34) The certificate of occupancy predates substantial completion inspection of the project.

Answer: ☒ True ☐ False

35) The certificate of substantial completion is issued by the local jurisdiction.

Answer: ☐ True ☒ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

36) The final completion inspection of the project is conducted by the

- A) building official of the city.
- B) owner with the help of the architect.
- C) architect.
- D) architect and the building official of the city.
- E) architect with the help of consultants.

Answer: E

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

37) The primary purpose of the contract modification procedure in the agreement between the owner and the GC is to allow change orders.

Answer: ☐ True ☒ False

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

38) A record document set includes

- A) as-built construction drawings.
- B) a record of all communications among the owner, architect, and the GC.
- C) a record of all communications between the owner and the GC.
- D) as-built construction drawings, as-built specifications, as-built shop drawings, etc.
- E) none of the above.

Answer: D

39) When does the owner receive manufacturers' warranties from the GC?

- A) At final completion inspection
- B) Within one week of the GC receiving warranties from the respective manufacturer or subcontractor
- C) At substantial completion inspection
- D) None of the above

Answer: C

40) In which of the following project delivery methods does the GC provide preconstruction services?

- A) DBB Method: Competitive Sealed Proposal
- B) DBB Method: Invitational Bidding
- C) DBB Method: Competitive Sealed Bidding
- D) All of the above
- E) None of the above

Answer: E

- 41) In the CMAR method of project delivery, the CM
- A) advises the owner in the selection of the architect and the design team members.
 - B) advises the design team with respect to the constructability of design decisions and their cost implications.
 - C) works as the general contractor for the project.
 - D) only A and B
 - E) only B and C

Answer: E

- 42) The project delivery method in which only one firm is contracted for both design and construction of the building is called the
- A) CMAR method.
 - B) CMAA method.
 - C) IPD method.
 - D) design-bid-build method.
 - E) design-build method.

Answer: E

- 43) The project delivery method that should ensure the least amount of litigation among parties contributing to the project is the
- A) IPD method.
 - B) design-build method.
 - C) CMAA method.
 - D) design-bid-build method.
 - E) CMAR method.

Answer: A

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

- 44) BIM is the most recently developed project delivery method.

Answer: True ☒ False

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

- 45) Which project delivery phase comes after the design phase?

Answer: Preconstruction phase

- 46) In which project delivery phase is the decision generally made whether the project is to be designed to earn a certain level of sustainability rating?

Answer: Predesign phase

- 47) Is the preparation of the program for the project generally included as part of the architect's "basic" services, or is the architect compensated additionally if asked to assist in the preparation of the program?

Answer: Per the American Institute of Architects, the preparation of the program for a project is not included in the basic services provided by the architect. Therefore, if the architect is asked to participate in the process, he (she) is to be compensated additionally.

- 48) The predesign phase of the project comprises a number of tasks. Which one of these is of the utmost importance to the design phase?

Answer: The preparation of the program for the project is of utmost importance.

49) What is contained in the program of a building project?

Answer: The program for a building essentially contains various activities and functions that the building must house, including the approximate square footage of spaces allocated to these activities, project budget, project's time of completion, and so on.

50) Building design is generally a teamwork comprising several design professionals. Who is the prime design professional in most building projects?

Answer: The architect is the prime design professional in almost all building projects.

51) In most building projects, the consultants are hired by the architect to ensure complete coordination among the tasks of the architect and the consultants. However, in some projects, one or more consultants may be hired directly by the owner (sometimes before the selection of the architect). In such cases, the architect may still be held accountable for any error committed by the owner-appointed consultant(s). Explain why that is so.

Answer: An important function that the architect performs is the coordination of the work of all consultants involved in the project. Therefore, the architect is liable for any error made in coordinating the consultants' work, regardless of whether they are appointed by the owner or the architect.

52) The design phase of a project is generally divided into three stages that are sequential. List these stages in sequential order in spelt-out format along with their acronyms.

Answer: 1. Sketch design (SD) stage
2. Design development (DD) stage
3. Construction document (CD) stage

53) During a routine visit to the construction site, the project architect observes that the exterior wall cladding of the building is being installed before installing the windows (that are available on the site). The project architect's experience is that this sequence of construction will compromise the aesthetics and workmanship of the wall and discusses the issue with the general contractor (GC), who disagrees. What should be the project architect's follow-up step?

Answer: The project architect should follow up by sending his observation as a suggestion (not as a directive) through an email to the GC with a copy to the owner.

54) The MasterFormat has two separate divisions called "Specialties" and "Special Construction." What is the difference between them?

Answer: The Specialties division deals with prefabricated items such as tack boards, marker boards, lockers, and so on. The Special Construction division deals with items constructed on site, which cannot be included in other divisions of the MasterFormat.

55) The textbook shows the sketch of a one-room, hypothetical building that can be used to recollect the sequence of the first few divisions of the MasterFormat. Describe what this building consists of in terms of its structure and the materials used so that someone can sketch it from the description.

Answer: One room, rectangular building with masonry walls, door and window openings in walls, steel joist roof, and plywood roof deck.

56) Section 1.6 of the text states that building design and construction contracts in all project delivery methods are two-party contracts with the exception of one project delivery method. Which one is that?

Answer: In an integrated project delivery (IPD) method, the contract is a multi-party contract.

57) Which division of the MasterFormat contains information that the owner, the design team and the contracting team would not need after the construction contract has been awarded?

Answer: Division 00: Procurement and Contracting Requirements

- 58) In which of the three documents (construction documents, bidding documents, and contract documents) are contract modifications included?
- Answer: Contract modification(s) apply to owner - GC contract and is (are) included in the contract documents, i.e., after the execution of the original contract. They must be mutually agreed upon between the owner and the GC.
- 59) In a typical building project, the GC must provide (and pay for) all three surety bonds—bid bond, performance bond, and payment bond—to the owner. In certain situations, the owner may waive bid bond requirement. Mention one such situation.
- Answer: Bid bond may be waived in situations where the owner is familiar with the GC's financial standing and ability to perform the work, such as in invitational bidding project delivery method.
- 60) In reality, who bears the cost of surety bonds that the GC has to provide to the owner and why?
- Answer: The owner because the GC simply adds the cost of the bonds to his (her) bid.
- 61) Name at least three items of construction for which shop drawings are generally required.
- Answer: Any item that is not available as a standard, off-the-shelf, prefabricated item and hence requires special shop fabrication per the architect's design, requires the preparation of shop drawings. Examples are windows, doors, and structural steel members, such as columns and beams.
- 62) Name an additional benefit of the tower-mounted web-based camera(s) on a construction site, other than providing 24x7 imagery of the construction progress.
- Answer: Tower-mounted construction site cameras add to security and theft prevention at the site.
- 63) What is the essential difference between a change order and a modification of contract? Explain.
- Answer: A change order is a minor modification of contract, not requiring GC's consent to it. Contract modification refers to a major change and must be mutually agreed to between the owner and the GC.
- 64) How do GCs generally obtain information on upcoming construction projects that they could bid for?
- Answer: There are several web sites that specialize in federal, state-wide, and private construction project bidding opportunities. The GCs regularly visit these sites to keep abreast of the opportunities.
- 65) Of the four project delivery methods, which delivery method is least popular at the present time, as described in the text?
- Answer: Integrated project delivery (IPD) method.
- 66) Of the four project delivery methods, which delivery method is most popular at the present time, as described in the text?
- Answer: Design-bid-build (DBB) method.
- 67) Which design documentation technology allows the detection of clashes between building components during the design stage? Does this technology reduce the amount of time spent on sketch design (SD) and design development (DD) stages of the project?
- Answer: Building information modeling (BIM) detects clashes between components during the design phase. BIM generally increases time spent on SD and DD stages but reduces time during construction document (CD) stage.
- 68) List the phases into which the work on a building project is divided, including the three subdivisions (stages) of the design phase. Then, briefly explain what is accomplished in each stage.
- Answer: See the Instructor's Manual (IM).

- 69) Using a diagram, show the contractual relationships among the owner, architect, consultants, GC, and the subcontractors in a conventional (design-bid-build) building project.
Answer: See the Instructor's Manual (IM).
- 70) Sketch in three dimensions the hypothetical building given in the text, which may be used to recollect the first 10 divisions of the MasterFormat. Then, list these 10 divisions.
Answer: See the Instructor's Manual (IM).
- 71) List the important items contained in a project manual. At what stage are addenda and contract modifications added to the document that will finally become the project manual?
Answer: See the Instructor's Manual (IM).
- 72) Using a sketch, explain the difference among construction documents, bidding documents, and contract documents.
Answer: See the Instructor's Manual (IM).
- 73) Explain the difference between change orders and contract modifications.
Answer: See the Instructor's Manual (IM).
- 74) Explain what is included in record documents and why they are required.
Answer: See the Instructor's Manual (IM).
- 75) What are shop drawings, why are they required, and for which items? Who prepares them, and do they require any approval? If so, by whom? Explain.
Answer: See the Instructor's Manual (IM).
- 76) Explain the purposes of the three surety bonds used in a typical building project, and the stages at which they are provided.
Answer: See the Instructor's Manual (IM).
- 77) Provide the spelled-out versions of the acronyms "CMAA" and "CMAR." Then, explain the differences between the two project delivery methods. Use sketches to illustrate the contractual relationships between various parties involved in both methods.
Answer: See the Instructor's Manual (IM).
- 78) Explain the benefits of the GC's preconstruction services. In which project delivery methods are GC's preconstruction services available?
Answer: See the Instructor's Manual (IM).
- 79) Explain what integrated project delivery is and how it differs from the other methods of project delivery.
Answer: See the Instructor's Manual (IM).
- 80) Using a sketch, explain what fast-track scheduling is, and then, list its advantages and disadvantages.
Answer: See the Instructor's Manual (IM).