Building Construction 3rd edition Mehta Test Bank

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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 and electrical plans.
B) mechanical, electrical, and plumbing.
C) mechanical and electrical plant.
D) mechanical, electrical, and piping.
E) municipal emergency plan.

Answer: B

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

Answer: B

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

Answer: B

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

Answer: A

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

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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) three–dimensional drawings.
B) photographs of three–dimensional scale model(s).
C) two–dimensional plans, elevations, sections, and details.
D) freehand sketches.
E) all of the above.

Answer: C

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

Answer: C

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

Answer: E

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 in collaboration with the GC.
C) architect and the architect's consultants.
D) architect.
E) none of the above.

Answer: C

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

Answer: E

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

Answer: D

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

Answer: D

16) In MasterFormat, windows are part of
A) Division 07.
B) Division 06.
C) Division 04.
D) Division 05.
E) none of the above.

Answer: E

17) In MasterFormat, roofing is part of
A) Division 11. B) Division 10. C) Division 07. D) Division 08. E) Division 09.

Answer: C

18) In MasterFormat, flooring is part of
A) Division 07. B) Division 06. C) Division 09. D) Division 05. E) Division 08.

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 and specifications.
C) construction drawings, specifications, and addenda.
D) construction drawings.
E) none of the above.

Answer: C

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21) A contract document set consists of
A) construction drawings, specifications, addenda, and contract modifications.
B) construction drawings, specifications, and addenda.
C) construction drawings.
D) construction drawings and specifications.
E) none of the above.

Answer: A

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

Answer: D

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) at the time of executing the owner–GC agreement.
B) within one week of the GC commencing construction.
C) when the GC provides performance bond to the owner.
D) when the owner gives the notice to GC to proceed with the work.
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.
D) the owner, architect, and the consultants.
E) the owner and the architect.

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

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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) design–build method (DB) method.
C) design–negotiate–build (DNB) method.
D) integrated project delivery (IPD) method.
E) construction manager at risk (CMAR) method.

Answer: A

29) The shop drawings are prepared by the
A) structural engineer.
B) MEP engineer.
C) architect.
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) GC.
C) architect. D) collectively of all the above.

Answer: B

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

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

Answer: D

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

Answer: C

39) When does the owner receive manufacturers' warranties from the GC?
A) Within one week of the GC receiving warranties from the respective manufacturer or subcontractor
B) At substantial completion inspection
C) At final completion inspection
D) None of the above

Answer: B

40) In which of the following project delivery methods does the GC provide preconstruction services?
A) DBB Method: Invitational Bidding
B) DBB Method: Competitive Sealed Proposal
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

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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) IPD method.
C) design–build method.
D) design–bid–build method.
E) CMAA method.

Answer: C

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

Answer: C

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.

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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.

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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 24×7 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).

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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).

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1) D
2) FALSE
3) B
4) B
5) B
6) A
7) FALSE
8) C
9) C
10) E
11) C
12) E
13) D
14) E
15) D
16) E
17) C
18) C
19) A
20) C
21) A
22) FALSE
23) D
24) FALSE
25) E
26) B
27) TRUE
28) A
29) E
30) FALSE
31) TRUE
32) B
33) B
34) TRUE
35) FALSE
36) D
37) FALSE
38) C
39) B
40) E
41) E
42) C
43) C
44) FALSE
45) Preconstruction phase
46) Predesign phase
47) 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 preparation of the program for the project is of utmost importance.

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49) 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) The architect is the prime design professional in almost all building projects.
51) 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) 1. Sketch design (SD) stage
2. Design development (DD) stage
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53) 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 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) One room, rectangular building with masonry walls, door and window openings in walls, steel joist roof, and plywood roof deck.
56) In an integrated project delivery (IPD) method, the contract is a multi–party contract.
57) Division 00: Procurement and Contracting Requirements
58) 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) 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) The owner because the GC simply adds the cost of the bonds to his (her) bid.
61) 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) Tower–mounted construction site cameras add to security and theft prevention at the site.
63) 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) 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) Integrated project delivery (IPD) method.
66) Design–bid–build (DBB) method.
67) 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) See the Instructor's Manual (IM).
69) See the Instructor's Manual (IM).
70) See the Instructor's Manual (IM).
71) See the Instructor's Manual (IM).
72) See the Instructor's Manual (IM).
73) See the Instructor's Manual (IM).
74) See the Instructor's Manual (IM).
75) See the Instructor's Manual (IM).
76) See the Instructor's Manual (IM).
77) See the Instructor's Manual (IM).
78) See the Instructor's Manual (IM).
79) See the Instructor's Manual (IM).
80) See the Instructor's Manual (IM).

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

1) A building code regulates
   A) the design of the building.
   B) the construction of the building.
   C) the aesthetics of the building.
   D) all of the above.
   E) both A and B.

   Answer: E

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

2) In a building code, some life safety provisions are contained in fire safety provisions and the remaining ones in structural safety provisions.

   Answer: True False

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

3) The building code requirements for the dimensions of treads and risers of a staircase are
   A) life safety issues.
   B) fire safety issues.
   C) health and welfare issues.
   D) property protection issues.
   E) structural safety issues.

   Answer: A

4) The building code requirements for the means of egress from a building are primarily
   A) structural safety issues.
   B) fire safety issues.
   C) property protection issues.
   D) life safety issues.
   E) health and welfare issues.

   Answer: B

5) The enforcement of a building code is usually done at the level of the
   A) state in which the building is located.
   B) city in which the building is located.
   C) county in which the building is located.
   D) country in which the building is located.

   Answer: B

6) The person in charge of enforcing the building code is generally called a
   A) code in–charge.
   B) building code representative.
   C) building official.
   D) building code spokesperson.
   E) none of the above.

   Answer: C

7) Before commencing the construction of a building, the owner must apply to the city to obtain a
   A) construction permit.
   B) building permit.
   C) commence work order.
   D) building license.

   Answer: B

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8) To ensure that the construction of the building is being done in accordance with the building code, the city will arrange for its inspection

A) two times during construction.
B) several times during construction.
C) only once during construction.
D) three times during construction.

Answer: B

9) If during the construction of the building, the building inspector discovers a gross violation of the building code, he or she will generally

A) issue arrest warrant against the owner.
B) invite the owner for a meeting.
C) issue a warning to the owner.
D) issue a stop work order to the owner.
E) take the owner to the appropriate court of law.

Answer: D

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

10) The board of appeals of the city does not have the authority to change building code provisions.

Answer: True False

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

11) In the case of a dispute between the building official and the owner about the interpretation of a building code provision, the matter is first resolved by

A) the owner's architect.
B) an independent arbitrator mutually agreed to between the owner and the city.
C) the city attorney.
D) an ad hoc committee appointed by the city.
E) none of the above.

Answer: E

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

12) A prescriptive building code provision is easier to enforce than a performance provision.

Answer: True False

13) Performance–type building code provisions inhibit the use of innovative building materials and construction systems compared with prescriptive type provisions.

Answer: True False

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

14) Writing and periodically updating the building code in the United States is generally done by

A) the federal government.
B) the individual city.
C) the individual state.
D) a specialized independent agency.

Answer: D

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15) The International Building Code is published by the
A) International Conference of Building Officials.
B) North American Council of Governments.
C) U.S. government.
D) Building Officials and Code Administrators International.
E) None of the above.

Answer: E

16) The International Building Code is generally updated every
A) 2 years. B) 3 years. C) 4 years. D) 5 years. E) 10 years.

Answer: B

17) The adoption of a model building code in the United States is done at the level of
A) the entire country.
B) each state.
C) each city.
D) either A or B.
E) either B or C.

Answer: E

18) The first step in applying the building code to a project is to
A) determine the width of open spaces around the building.
B) determine if the building is provided with an automatic sprinkler system.
C) determine the number of exits from the building at the ground floor.
D) determine the occupancy classification of the building.

Answer: D

19) The total number of occupancies (excluding the divisions) as specified in the International Building Code is
A) 6.
B) 12.
C) 10.
D) 8.
E) none of the above.

Answer: C

20) Which of the following is *not* a recognized building code occupancy?
A) Educational B) Assembly C) Office D) Institutional E) Business

Answer: C

21) A hotel building is a
A) business occupancy.
B) hospitality occupancy.
C) hotel occupancy.
D) mixed occupancy.
E) none of the above.

Answer: E

22) The International Building Code divides the types of construction into
A) Types U, V, X, and Y.
B) Types 1, 2, 3, 4, and 5.
C) Types I, II, III, IV, V, and VI.
D) Types I, II, III, IV, and V.

Answer: D

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23) The most fire resistive type of construction is
A) Type I. B) Type II. C) Type V(A). D) Type I(A). E) Type 5(A).
Answer: D

24) The International Green Construction Code (IGCC) is published by the
A) Green Globes.
B) Green Building Initiative (GBI).
C) International Code Council.
D) United States Green Building Council (USGBC).
E) ASTM International.
Answer: C

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

25) A prescriptive code needs no standards.
Answer: True False

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

26) The construction standards used in building codes are produced by
A) governmental organizations.
B) professional societies.
C) trade associations.
D) standards writing organizations.
E) all of the above.
Answer: E

27) Which of the following is *not* a standards writing organization?
A) ANSI B) ASTM C) NSF D) UL
Answer: C

28) Which of the following is the largest standards writing organization?
A) UL B) ANSI C) ASTM D) ASCE E) NRCA
Answer: C

29) The acronym UL stands for
A) Universal Laboratories.
B) Union of Laborers.
C) United Legislature.
D) Underwriters Laboratories.
Answer: D

30) A zoning ordinance refers to regulations that pertain mainly to
A) the use of highways within the city.
B) the use of land within the city.
C) the use of buildings within the city.
D) none of the above.
Answer: B

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31) A zoning ordinance consists of
A) the zoning text, zoning map, and the building code of the city.
B) the zoning map of the city.
C) the zoning map and the building code of the city.
D) the zoning text and the zoning map of the city.
E) the zoning text and the building code of the city.

Answer: D

32) The term FAR refers to
A) floors as required.
B) factory area restrictions.
C) floor area ratio.
D) none of the above.

Answer: C

33) If the total area of a lot is 15,000 ft^2 and the total covered area on all floors of the building on this lot is 60,000 ft^2, the FAR for the property is
A) 3.7.
B) 0.25.
C) 1.5.
D) 6.0.
E) none of the above.

Answer: E

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

34) The Americans with Disabilities Act (ADA) is devoted entirely to provisions relating to accessibility within a building.

Answer: True False

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

35) Before granting the building permit, the office of the building official of a jurisdiction must review the construction documents of the building for conformance with
A) the accessibility requirements of the jurisdiction's building code.
B) the requirements of the Americans with Disabilities ACT (ADA) passed by the federal government
C) either A or B depending on the jurisdiction.
D) none of the above.

Answer: D

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

36) What does the acronym "HSW" stand for?

Answer: Health, safety, and welfare.

37) In dealing with safety in buildings, the building codes classify safety under three types. Name them.

Answer: 1. Life safety; 2. Fire and smoke safety, and 3. Structural safety.

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38) If a building has been designed to fully conform with the building code, the design team (architect and consultants) is fully protected from liability risk exposure. Is this statement true? Explain.

Answer: No, it is not true, because the building must comply with other laws and standards apart from the building code, such as the city's zoning laws and applicable construction standards. Additionally, the architect and the design team may be held accountable for breach of contract administration duties, such as not observing and disclosing errors made by the GC during the construction of the project, particularly if the errors were preventable through ordinary skill and attention.

39) A building code has provisions regarding the maximum and minimum dimension of treads and risers of a staircase. Are these primarily fire safety or life safety provisions?

Answer: Life safety provisions.

40) The means of egress system in a building is divided into three parts. List them.

Answer: 1. Exit access
2. Exit
3. Exit discharge

41) An exit staircase has an exterior door opening to a public street. Is it an exit, an exit access, or an exit discharge?

Answer: It is an exit.

42) What is a building permit and where is it obtained from?

Answer: A building permit means "permission to build," i.e., permission to start and continue construction. It is obtained from the city where the proposed building is located.

43) What does a city typically require from the owner in consideration of the grant of a building permit?

Answer: The city needs: (a) building permit application, (b) required fee, and (c) hard copies or a digital copy (or both) of the construction document (CD) set, depending on the city.

44) To ensure that the building is constructed per the provisions of the building code of the city and the approved CD set given by the city to the owner (as part of the building permit), the building is inspected at several stages by the city's building department. If during an inspection, a gross violation of a building code provision or of the approved CD set is discovered, what would the city normally do?

Answer: The city will issue a stop work order, asking for further construction to cease until the violation has been corrected and so approved by the city through an inspection.

45) What does a "certificate of occupancy" imply? Where is it obtained from and by whom—the GC or the architect of the project?

Answer: A certificate of occupancy implies that the building is (substantially) complete and is safe to occupy by the owner. It is obtained from the city (generally by the GC) after a detailed inspection by the city's building inspection department.

46) List (a) one advantage of a performance provision of the code over a prescriptive provision, and (b) one advantage of a prescriptive provision of the code over a performance provision.

Answer: (a) A performance provision gives freedom to choose building materials and assemblies as long as the code-prescribed performance requirements are met. In a prescriptive provision there is no such freedom. (b) A prescriptive provision is easier to interpret and conform to but lacks freedom to choose materials and assemblies.

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47) Which organization in the United States publishes various codes related to the design and construction of buildings?

Answer: International Code Council (ICC)

48) Name at least four codes published by the International Code Council (ICC).

Answer: International Building Code (IBC), International Residential Code (IRC), International Mechanical Code (IMC), International Plumbing Code (IPC), and so on.

49) In designing the following residential buildings, should the architect refer to IBC or IRC: (a) a semi-detached 2-family dwelling, (b) a 3-story townhouse, (c) a 3-story apartment building?

Answer: (a) A semi-detached 2-family dwelling—IRC
(b) A 3-story townhouse—IRC
(c) A 3-story apartment building—IBC.

50) What does the term "IGCC" stand for?

Answer: International Green Construction Code.

51) Name the two most important items of information about the building you will need to determine its maximum allowable area and maximum allowable height.

Answer: 1. Building's occupancy classification
2. Building's type of construction

52) In a building code, what does the term "frontage" imply?

Answer: Frontage refers to the open space around the building that is accessible to a public way or street. It is measured as the distance of each side of the building's footprint from the lot line or the far side of the street (i.e., the width of the street is included in frontage).

53) In which situation is the open space provided by a courtyard within a building not considered as "frontage" by a building code?

Answer: When the courtyard is not accessible to a public way or street.

54) The Assembly occupancy group has five divisions—A-1, A-2, A-3, A-4, and A-5—which are recognized as separate occupancies by a building code. Which one of these is the most hazardous occupancy and which is the least hazardous occupancy?

Answer: Most hazardous—Occupancy A-1
Least hazardous—Occupancy A-5

55) Is a university or a college campus building included in "Educational" occupancy? Explain your answer.

Answer: No, a college or university building is not an "Educational" occupancy because an Educational occupancy is for buildings meant for students up to grade 12 only.

56) List the three most important standard writing organizations in the United States, giving their acronyms.

Answer: 1. ASTM International (ASTM)
2. Underwriters Laboratories (UL)
3. American National Standards Institute (ANSI)

57) Is the test procedure to determine the fire resistance or sound insulation of a floor (or a wall) in a building described in a building code or in a construction standard?

Answer: In a construction standard.

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58) Is the performance requirement of a floor (or a wall) of a building, such as its required fire resistance rating, covered in a building code or a construction standard?

Answer: Building code.

59) As far as buildings are concerned, what is the Underwriters Laboratories (UL) primarily recognized for?

Answer: Testing the fire resistance of building assemblies.

60) What is the purpose of a zoning ordinance and which organization produces it?

Answer: The purpose of a zoning ordinance is to control the use of land within the jurisdiction of a city. The zoning ordinance is produced by the city.

61) Name the two documents that constitute a zoning ordinance and explain what they contain.

Answer: 1. Zoning map: contains the master plan of the city that divides the land within the city boundaries in zoning districts and sub–districts.
2. Zoning text: contains: (a) the type(s) of buildings that are allowed in each zoning district and sub–district and (b) the development standards (restrictions) related to each lot.

62) How does a zoning ordinance control the building's footprint on a lot?

Answer: By restricting the ground coverage, defined as the area of a building's footprint divided by the area of the lot. This ratio is generally expressed as a percentage.

63) What is FAR?

Answer: FAR stands for floor area ratio. The ratio is the total built–up area in a building (i.e., the sum of areas on various floors of the building) divided by the area of the lot.

64) How does a city handle the request for change in land use prescribed in the city's zoning ordinance?

Answer: Each city has a standing body, called *zoning and planning commission*, that reviews requests for land use change.

65) What does building accessibility mean in practical terms?

Answer: Building accessibility means that (all parts of) a building is (are) as easily accessible to, and useable by, individuals with disability as it is by the normal persons.

66) In terms of a building's accessibility by individuals with disabilities, what types of disabilities are included in the term "disability"?

Answer: Disability with respect to mobility, hearing, seeing, and physical stature.

67) What is the primary purpose of building codes? Explain.

Answer: See the Instructor's Manual (IM).

68) What is the difference between a prescriptive– and a performance–type code provision? Explain with the help of an example.

Answer: See the Instructor's Manual (IM).

69) List the model code organizations that existed in the United States prior to the year 2000 and the building codes published by each.

Answer: See the Instructor's Manual (IM).

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70) Describe the relationship between a building code and construction standards, and list three important standards organizations in the United States.

Answer: See the Instructor's Manual (IM).

71) What information can you derive from a given designation of an ASTM standard such as E119–95a?

Answer: See the Instructor's Manual (IM).

72) List the first five steps you will follow in ascertaining that a building conforms to the provisions of the building code.

Answer: See the Instructor's Manual (IM).

73) List at least three codes published by the International Code Council.

Answer: See the Instructor's Manual (IM).

74) What do the terms *ground coverage* and *floor area ratio* (FAR) mean? Are they part of building code provisions? Explain.

Answer: See the Instructor's Manual (IM).

75) What is the board of adjustment? Explain.

Answer: See the Instructor's Manual (IM).

76) What are the responsibilities of a zoning and planning commission of a city?

Answer: See the Instructor's Manual (IM).

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Use the figure below to answer the following questions.

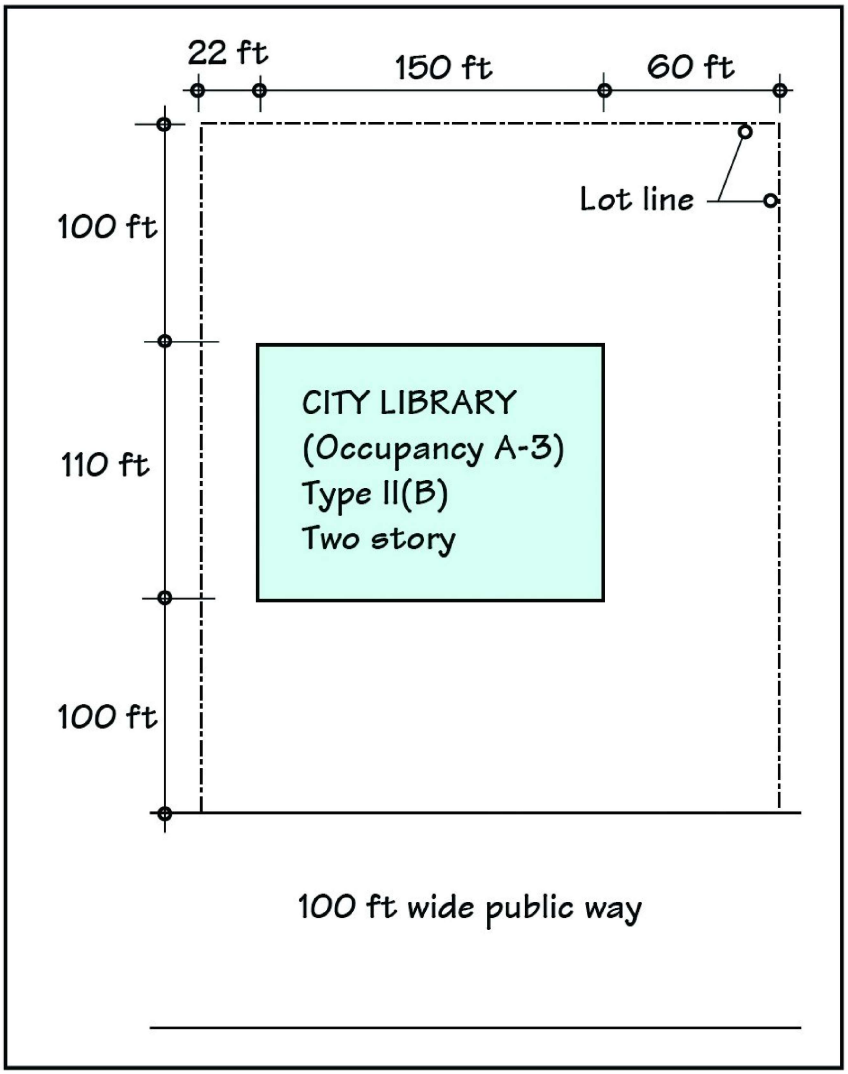


FIGURE 2.27 Layout plan (not to scale) of a library building

77) Show that the value of I_f for the building of Figure 2.27 is 0.71.

Answer: See the Instructor's Manual (IM).

78) If in the layout plan of Figure 2.27, the rear setback is changed to 35 ft (in place of 100 ft) and all else remains the same as shown, what will be the revised value of I_f? Explain.

Answer: See the Instructor's Manual (IM).

79) Show that the value of I_f in the layout plan of Figure 2.27 is 0.54 if the left-side setback is changed to 15 ft (in place of 22 ft) and all else remains the same as shown.

Answer: See the Instructor's Manual (IM).

80) Show that the maximum allowable area per story of the building of Figure 2.27 is 35,245 sq ft, assuming that the building is fully sprinklered and $I_f = 0.71$.

Answer: See the Instructor's Manual (IM).

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1) E
2) FALSE
3) A
4) B
5) B
6) C
7) B
8) B
9) D
10) TRUE
11) E
12) TRUE
13) FALSE
14) D
15) E
16) B
17) E
18) D
19) C
20) C
21) E
22) D
23) D
24) C
25) TRUE
26) E
27) C
28) C
29) D
30) B
31) D
32) C
33) E
34) FALSE
35) D
36) Health, safety, and welfare.
37) 1. Life safety; 2. Fire and smoke safety, and 3. Structural safety.
38) No, it is not true, because the building must comply with other laws and standards apart from the building code, such as the city's zoning laws and applicable construction standards. Additionally, the architect and the design team may be held accountable for breach of contract administration duties, such as not observing and disclosing errors made by the GC during the construction of the project, particularly if the errors were preventable through ordinary skill and attention.
39) Life safety provisions.
40) 1. Exit access
    2. Exit
    3. Exit discharge
41) It is an exit.
42) A building permit means "permission to build," i.e., permission to start and continue construction. It is obtained from the city where the proposed building is located.

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43) The city needs: (a) building permit application, (b) required fee, and (c) hard copies or a digital copy (or both) of the construction document (CD) set, depending on the city.
44) The city will issue a stop work order, asking for further construction to cease until the violation has been corrected and so approved by the city through an inspection.
45) A certificate of occupancy implies that the building is (substantially) complete and is safe to occupy by the owner. It is obtained from the city (generally by the GC) after a detailed inspection by the city's building inspection department.
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48) International Building Code (IBC), International Residential Code (IRC), International Mechanical Code (IMC), International Plumbing Code (IPC), and so on.
49) (a) A semi-detached 2-family dwelling—IRC
(b) A 3-story townhouse—IRC
(c) A 3-story apartment building—IBC.
50) International Green Construction Code.
51) 1. Building's occupancy classification
2. Building's type of construction
52) Frontage refers to the open space around the building that is accessible to a public way or street. It is measured as the distance of each side of the building's footprint from the lot line or the far side of the street (i.e., the width of the street is included in frontage).
53) When the courtyard is not accessible to a public way or street.
54) Most hazardous—Occupancy A-1
Least hazardous—Occupancy A-5
55) No, a college or university building is not an "Educational" occupancy because an Educational occupancy is for buildings meant for students up to grade 12 only.
56) 1. ASTM International (ASTM)
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3. American National Standards Institute (ANSI)
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59) Testing the fire resistance of building assemblies.
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62) By restricting the ground coverage, defined as the area of a building's footprint divided by the area of the lot. This ratio is generally expressed as a percentage.
63) FAR stands for floor area ratio. The ratio is the total built-up area in a building (i.e., the sum of areas on various floors of the building) divided by the area of the lot.
64) Each city has a standing body, called *zoning and planning commission*, that reviews requests for land use change.
65) Building accessibility means that (all parts of) a building is (are) as easily accessible to, and useable by, individuals with disability as it is by the normal persons.
66) Disability with respect to mobility, hearing, seeing, and physical stature.
67) See the Instructor's Manual (IM).
68) See the Instructor's Manual (IM).
69) See the Instructor's Manual (IM).
70) See the Instructor's Manual (IM).

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71) See the Instructor's Manual (IM).
72) See the Instructor's Manual (IM).
73) See the Instructor's Manual (IM).
74) See the Instructor's Manual (IM).
75) See the Instructor's Manual (IM).
76) See the Instructor's Manual (IM).
77) See the Instructor's Manual (IM).
78) See the Instructor's Manual (IM).
79) See the Instructor's Manual (IM).
80) See the Instructor's Manual (IM).

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