

1) Junior Architect

2) Computer-cum Vaccine Store keeper

3) Store keeper in Forensic Substore

2009  
**PJAF**

Booklet Series

**C**

Register  
Number

D-08 - 9.8.09 2009

## ARCHITECTURE

Time Allowed : 3 Hours ]

[ Maximum Marks : 300

Read the following instructions carefully before you begin to answer the questions.

### IMPORTANT INSTRUCTIONS

1. This Booklet has a cover ( this page ) which should not be opened till the invigilator gives signal to open it at the commencement of the examination. As soon as the signal is received you should tear the right side of the booklet cover carefully to open the booklet. Then proceed to answer the questions.
2. This Question Booklet contains **200** questions.
3. Answer **all** questions. **All** questions carry equal marks.
4. The Test Booklet is printed in *four* series e.g. **A** **B** **C** or **D** ( See Top left side of this page ). The candidate has to indicate in the space provided in the Answer Sheet the series of the booklet. For example, if the candidate gets **A** series booklet, he/she has to indicate in the side 2 of the Answer Sheet with Blue or Black Ink Ball point pen as follows :

**A**  **B** **C** **D**

5. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
6. An Answer Sheet will be supplied to you separately by the invigilator to mark the answers. You must write your Name, Register No. and other particulars on side 1 of the Answer Sheet provided, failing which your Answer Sheet will not be evaluated.
7. You will also encode your Register Number, Subject Code etc., with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, your Answer Sheet will not be evaluated.
8. Each question comprises *four* responses (A), (B), (C) and (D). You are to select **ONLY ONE** correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
9. In the Answer Sheet there are **four** brackets **A** **B** **C** and **D** against each question. To answer the questions you are to mark with Ball point pen **ONLY ONE** bracket of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. e.g. If for any item, (B) is the correct answer, you have to mark as follows :

**A**  **C** **D**

10. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the examination. After the examination is concluded, you must hand over your Answer Sheet to the invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
11. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.
12. The sheet before the last page of the Question Booklet can be used for Rough Work.
13. Do not tick-mark or mark the answers in the Question Booklet.

1. Which of the following is a wrong statement ?
  - A) Distempers are generally light in colour
  - B) Distempers provide good reflective coating
  - C) Distempers are more durable than oil paints
  - D) Distempers are treated as water paints.
  
2. What is saponification ?
  - A) Formation of soap patches on the painted surface
  - B) Loosening of some portion of painted surface
  - C) Formation of dull patches on the surface
  - D) Formation of bubbles under the film of paint.
  
3. Barium plaster is provided in
  - A) X-ray rooms
  - B) Public buildings
  - C) Reactor rooms
  - D) Bank vaults.
  
4. Slump test is to determine the
  - A) workability of concrete
  - B) durability of concrete
  - C) compressive strength of concrete
  - D) elasticity of concrete.
  
5. Amount of water required for hydration of cement is
  - A) 40% of water by weight of cement
  - B) 35% of water by weight of cement
  - C) 23% of water by weight of cement
  - D) 20% of water by weight of cement.

6. Slip form technique is suitable for
- A) concreting tall structures                      B) underwater concreting  
C) low rise structure                                D) retaining walls.
7. Efflorescence is due to
- A) presence of salts in the plaster making material  
B) blistering on the plastered surface  
C) formation of cracks on the surface  
D) presence of algae and bacteria on the plastered surface.
8. Which of the following Indian cities has Mandala ( 9 square ) concept in its design ?
- A) Ahmedabad                                              B) Jaipur  
C) Jaisalmer                                                D) Jodhpur.
9. Who is the author of the book '*Nothing Gained By Overcrowding*' ?
- A) Raymond Unwin                                      B) Lewis Mumford  
C) Lawrence Halprin                                    D) Jane Jacobs.
10. 'Defensible spaces' by Oscar Netymer is about
- A) safety in neighbourhood                        B) design of defence colonies  
C) design of commercial spaces                D) theft in neighbourhood areas.
11. Which of the following colour schemes is formed by any four hues equidistant on the wheel ?
- A) Double complementary                        B) Tetrad  
C) Triad                                                    D) Analogous.

12. Which of the following colour schemes is formed by colours immediately adjacent to each other on the colour wheel ?
- A) Analogous                                      B) Complementary  
C) Tetrad                                              D) Neutral.
13. Ken is a type of proportioning system used by
- A) Chinese                                            B) Egyptian  
C) Japanese                                           D) Greek.
14. Tint is
- A) adding grey to the colour  
B) adding black to the colour  
C) adding white to the colour  
D) adding black & white to the colour.
15. What is value of colour ?
- A) Subjective measure of reflectance    B) Degree of colourfulness  
C) Different tints of colour                      D) Colour intensity.
16. Modular system is based on
- A) Fibonacci series                                      B) Arithmetic series  
C) Geometric mean                                              D) Harmonic mean.
17. Red and green are
- A) analogous colours                                      B) secondary colours  
C) complementary colours                              D) cool colours.
18. Notre Dame du Haut is otherwise known as
- A) Ronchamp Chapel                                      B) Reims Cathedral  
C) Beauvais Cathedral                                      D) Abbaye Aux Hommes.

19. 'Falling Water' is the other name of
- A) Robie House
  - B) Kaufmann House
  - C) Glass House
  - D) Schröder House.
20. Which of the following provides better resistance to wear and abrasion of metal sheets ?
- A) Fluoropolymers ( PVF<sub>2</sub> )
  - B) Silicone enamels
  - C) PVC coatings ( Organasol )
  - D) PVC coatings ( Plastisol ).
21. The numerical indicator of the amount of heat gained through the specific glass is called
- A) Solar Heat Gain Coefficient (SHG)
  - B) Refractive Index
  - C) Emissivity
  - D) Relative Heat Gain ( RHG ).
22. Which building was the first to use titanium in its outer cladding ?
- A) 'Maison Folie' by Lars Spuybroek
  - B) 'Sendai Mediatheque' by Toyo Ito
  - C) 'Stadhaus Project' by Jurgen Mayer
  - D) 'Bilbao Museum' by Frank Gehry.
23. The ability of a material to be deformed without fracturing is called
- A) Creep
  - B) Ductility
  - C) Hysteresis
  - D) Felting.
24. What is a photopolymer ?
- A) A material added to a polymer to facilitate its processing
  - B) A polymer that undergoes a change when subjected to high temperatures
  - C) A polymer or plastic that undergoes a change on exposure to light
  - D) A polymer that softens when subjected to a high velocity heated air stream.

25. A measure of emissivity, which is the ability of a surface to emit or absorb radiant energy is called

- A) E-value
- B) ester
- C) dyne
- D) joule.

26. Which of the following is not a preservative of stone ?

- A) Coal tar
- B) Paint
- C) Paraffin
- D) Nut oil.

27. The method in which prestressing steel is tensioned against the hardened concrete is

- A) pre-tensioning
- B) post-tensioning
- C) re-tensioning
- D) precasting.

28. The initial setting time of cement can be increased by adding

- A)  $\text{CaO}$
- B)  $\text{Al}_2\text{O}_3$
- C)  $\text{CaSO}_4$
- D)  $\text{Fe}_2\text{O}_3$ .

29. The cement which can be used for mass construction is

- A) high alumina cement
- B) low heat cement
- C) quick setting cement
- D) rapid hardening cement.

30. The output of a 58 W fluorescent tube is

- A) 1500 lumens
- B) 3000 lumens
- C) 1360 lumens
- D) 5200 lumens.

31. With reference to reduction of noise transmission what is the function of structural damping ?
- A) Prevents audible noise from escaping a noise control system through cracks, vents, etc.
  - B) Isolates a structural borne noise caused by the vibration of machine parts
  - C) Reduces the vibration of resonating surfaces that radiate noise
  - D) Reduces the transmission of sound while permitting the free flow from one of the silencers to the other.
32. With reference to reduction of noise transmission, what is a system that prevents audible noise from escaping a noise control system through cracks and vents called ?
- A) Vibration isolation
  - B) Sealing
  - C) Structural vibration damping
  - D) Silencing.
33. A structure in the form of a chamber which is provided along the sewer line to admit clear rain water free from silt, debris, etc. into the combined sewer is called
- A) Storm regulators
  - B) Manholes
  - C) Clean-outs
  - D) Catch basin.
34. What are leaping weirs, overflow weirs and siphon spillway ?
- A) Components of a manhole
  - B) Storm regulators
  - C) Inverted siphons
  - D) Catch basins.

35. What is meant by 'one pipe system' with reference to building plumbing ?
- A) Where a separate vent pipe is added
  - B) Where a single vertical soil pipe is fixed which also acts as a vent
  - C) Where two sets of pipes are laid — soil pipe and waste pipe — each with a separate vent
  - D) Where two sets of pipes are laid — soil pipe and waste pipe.
36. A plumbing system of drainage work which comprises a single vertical soil pipe which also acts as a vent is called
- A) one pipe system
  - B) single stack system
  - C) double stack system
  - D) soil pipe system.
37. At what minimum depth should the water seal in a trap in a single stack system be ?
- A) 50 mm
  - B) 60 mm
  - C) 75 mm
  - D) 40 mm.
38. Demand of oxygen by organic matter in sewage is known as
- A) oxygen consumed
  - B) dissolved oxygen
  - C) oxidation
  - D) BOD.
39. When sewage is directly supplied to the root zone of plants through a system of underground pipes with open joints, it is called
- A) Sprinkler irrigation
  - B) Surface irrigation
  - C) Sub-surface irrigation
  - D) Furrow method.



40. Which of the following statements is not true ?
- A) Vedic village architecture had a direct influence on Buddhist architecture
  - B) Cow gate of Vedic village was the inspiration to Toranas
  - C) Indus Valley architecture had direct influence on Vedic village architecture
  - D) Aryan speaking people were the inhabitants of Vedic village.
41. The amount to be deposited by the contractor while submitting the tender is known as
- A) security deposit
  - B) fixed deposit
  - C) guarantee fund
  - D) earnest money deposit.
42. It is not possible to make alteration, addition or omission in a work in the case of
- A) piece work contract
  - B) lump-sum contract
  - C) schedule or item rate contract.
  - D) labour contract.
43. The rate of progress of work cannot be insisted upon from the contractor under
- A) lump-sum contract
  - B) piece work agreement
  - C) item rate contract
  - D) lump-sum schedule contract.
44. What type of foundation is preferred for black cotton soil/soils having poor bearing capacity ?
- A) Isolated footing
  - B) Under-reamed piles
  - C) Raft foundation
  - D) Stepped foundation.

45. The type of sewage treatment suitable for small cities or institutions, where the installation of separate sludge digestion tank is not possible is
- A) Imhoff tank  
B) chlorination of sewage  
C) oxidation ponds  
D) septic tanks.
46. Bio-chemical Oxygen Demand of sewage is about
- A) amount of oxygen required to convert the sewage into inorganic material  
B) amount of inorganic material present in the sewage  
C) requirement of chemical to oxidise  
D) amount of organic material present in the sewage.
47. Rate of sewage distribution per day per person is
- A) 180 litres per day  
B) 200 litres per day  
C) 160 litres per day  
D) 120 litres per day.
48. Reflux valve is to
- A) allow the water in one direction  
B) drain the pipe for periodical cleaning  
C) release the pressure  
D) release the air.
49. Per capita water consumption per day in urban area is
- A) 135 litres per day  
B) 150 litres per day  
C) 140 litres per day  
D) 120 litres per day.

50. Minimum rate of air changes per hour in building for effective ventilation system is
- A) more than 60 air changes per hour
  - B) one air change per hour
  - C) three air changes per hour
  - D) five to six air changes per hour.
51. The Chaitya Halls of Buddhist period are
- A) mainly used as congregational space
  - B) used as worshipping place
  - C) used as residential accommodation for monks
  - D) centres of learning.
52. Papanatha Temple is an example for
- A) early Gupta architecture
  - B) early Chalukyan architecture
  - C) Hoysala architecture
  - D) Dravidian architecture.
53. IIM, Bangalore was designed by
- A) Charles Correa
  - B) Raj Rewal
  - C) Louis I Kahn
  - D) B.V. Doshi.
54. Mill Owners Association Building in Ahmedabad was designed by
- A) Le Corbusier
  - B) Hasmukh Patel
  - C) Allen & Stein
  - D) Charles Correa.
55. Who designed 'Bauhaus School of Architecture' ?
- A) Mies van der Rohe
  - B) Walter Gropius
  - C) F.L. Wright
  - D) Philip Johnson.

56. Who designed CCTV building in Beijing, China ?

- A) Sejima  
 B) Steven Holl  
 C) Rem Koolhaas  
 D) Toyo Ito.

57. The traditional way of achieving daylighting while excluding direct sunlight is

- A) Clerestoreys  
 B) North windows  
 C) South windows  
 D) Ventilators.

58. The formula for calculating the altitude of the sun for any hour, for the given latitude and the season of the year is

- A)  $\sin AL = \cos D \cdot \cos L \cdot \cos H + \sin D \cdot \sin L$   
 B)  $\sin AL = \frac{\cos D \cdot \sin L}{\cos H}$   
 C) both (a) & (b)  
 D) none of these.

where AL - Altitude of sun above the horizon

L - Latitude of the place

D - Declination of the sun

H - Local hour angle of the sun.

59. Which of the following is not the tool of development control rule ?

- A) Density control  
 B) Landuse control  
 C) Quality control  
 D) Advertisement control.

60. Data required to find out the effective temperature are

- A) WBT, DBT & air velocity  
 B) DBT, RH & air movement  
 C) temperature & RH  
 D) WBT, DBT & RH.

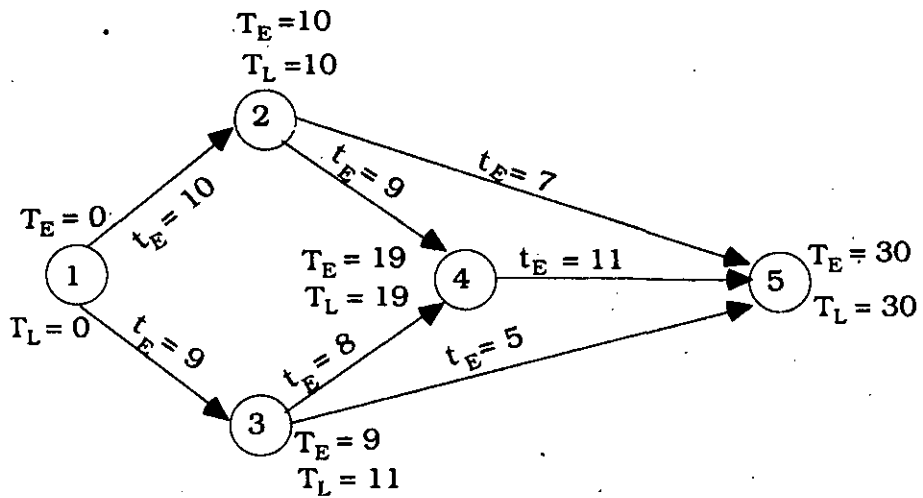
61. Which of the following statements is not true ?
- A) Heat is a form of energy
  - B) Difference in temperature is referred as deg C
  - C) Temperature is a physical quantity
  - D) Acceleration is a unit change in velocity in unit time.
62. In Autocad to construct a polygon mesh representing the ruled surface between two curves which of the following commands is used ?
- A) TAB SURF
  - B) RULE SURF
  - C) EDGE SURF
  - D) REV SURF.
63. In Autocad which of the following commands is used to create a free-form polygon mesh ?
- A) P FACE
  - B) 3D
  - C) EDGE SURF
  - D) 3D mesh.
64. Which of the following commands in autocad lets you map materials onto geometry ?
- A) LS NEW
  - B) SHOWMAT
  - C) MAT LIB
  - D) SETUV.
65. Which command in autocad creates a drawing interchange file of the current drawing ?
- A) DXF OUT
  - B) DWF OUT
  - C) 3DS OUT
  - D) BMP OUT.
66. Which command in autocad creates a photorealistic or realistically shaded image of a 3D wireframe or solid model ?
- A) Light
  - B) Render
  - C) Background
  - D) Shade.

67. Which of the following is not a computer language ?
- |            |          |
|------------|----------|
| A) Fortran | B) C++   |
| C) Autocad | D) Java. |
68. The short-cut key for 'OSNAP' is
- |       |        |
|-------|--------|
| A) F2 | B) F3  |
| C) F5 | D) F8. |
69. Which of the following is not an EDIT command ?
- |          |             |
|----------|-------------|
| A) Hatch | B) Stretch  |
| C) Scale | D) Explode. |
70. 'UCS' means
- |                                |                            |
|--------------------------------|----------------------------|
| A) Universal Coordinate System | B) Universal Coding System |
| C) User Coordinate System      | D) User Coding System.     |
71. Which one of the following detail cannot be depicted by bar chart ?
- A) Inter-relationships amongst the operations
- B) Dates for placing order for resources
- C) Starting and finishing of each operation
- D) Dates for periodical inspection.
72. The activity which does not consume any resources is known as
- |                      |                    |
|----------------------|--------------------|
| A) event             | B) activity        |
| C) critical activity | D) dummy activity. |
73. PERT planners make how many kinds of time estimates ?
- |                         |                         |
|-------------------------|-------------------------|
| A) One time estimate    | B) Two time estimates   |
| C) Three time estimates | D) Four time estimates. |

74. In PERT analysis, if the frequency distribution curve is symmetrical, then it is called as

- A) normal distribution curve
- B) beta distribution curve
- C) unimodal curve
- D) probability distribution curve.

75. Identify the critical path for the network shown in the figure :



- A)
- B)
- C)
- D)





82. 'Ekistics' is the term coined by

- A) Lewis Mumford
- B) Constantine Doxiadis
- C) Le Corbusier
- D) Patrick Geddes.

83. Eminent domain is all about

- A) residential areas
- B) mixed use zone of the city
- C) transferable development right
- D) government's power to acquisition of land.

84. VAMBAY program is about

- A) providing housing to the poor
- B) providing basic services
- C) ameliorating housing condition in slums
- D) low cost housing.

85. Reverse mortgage loan is for

- A) any adult Indian citizen
- B) only salaried employees
- C) senior citizens
- D) physically challenged person.

86. Which of the following is not a feature of Mughal Gardens ?

- A) Water
- B) Char Bagh
- C) Vegetation
- D) Stone water basin.

87. The non-flowering shrub from the following list is

- A) Rubber plant
- B) Catotropis
- C) Ixora
- D) Vinca Rosea.

88. Ninomaru Garden in Nijo Castle, Japan is a
- A) villa garden                                         B) castle garden  
C) temple garden                                       D) tea garden.
89. Due to increasing CO<sub>2</sub> level in atmosphere which of the following climatic changes at global level occurs ?
- A) Acid rain                                                B) Albedo effect  
C) Greenhouse effect                                    D) Smog.
90. Derelict urban land can occur due to the natural cause like
- A) mining                                                 B) waterlogging in land  
C) dumping yards                                       D) speculation by promoters.
91. Cause behind the formation of dead spots inside a space is
- A) excessive reverberation                              B) insufficient absorption  
C) insufficient sound volume                         D) irregular distribution of sound.
92. The most preferred system of plumbing in India is
- A) two pipe system  
B) one pipe system  
C) single stack system  
D) single stack partially ventilated system.
93. In a multistoried building deeper seal trap is provided mainly
- A) because deeper seal does not allow the foul gas to enter the house  
B) to avoid the breakage of seal due to anti-siphonage  
C) to avoid breakage of pipes  
D) to prevent back flow.

94. The purpose of trap in building service is to
- A) prevent the entry of foul gases into the building
  - B) connect two different sizes of pipe
  - C) aerate the system
  - D) none of these.
95. When certain chemicals are added to turbid water to convert impurities into settable size, the process is called
- A) Sedimentation
  - B) Coagulation
  - C) Biological metabolism
  - D) Ozonisation.
96. A well used when an aquifer is enclosed between two impervious layers and the hydraulic gradient line is above the ground level of the site is better known as
- A) Infiltration well
  - B) Tubewell
  - C) Artesian well
  - D) Deep bore well.
97. The permissible turbidity for drinking water is
- A) 5 ppm to 10 ppm
  - B) 8 ppm to 12 ppm
  - C) 10 ppm to 15 ppm
  - D) 12 ppm to 15 ppm.
98. The pH value of potable water should be
- A) 0
  - B) 7 to 14
  - C) 14
  - D) 7 to 8.5.
99. The type of mortar used for general RCC work such as lintels, pillars, slabs, etc., is
- A) cement mortar of proportion 1 : 3
  - B) cement mortar of proportion 1 : 2
  - C) cement mortar of proportion 1 : 3 and concrete mix 1 : 2 : 4
  - D) cement mortar of proportion 1 : 2 and concrete mix 1 : 2 : 6.

100. The method which is not suitable for curing vertical concrete members or surfaces is
- A) covering with jute bags                      B) covering with wet sand  
C) applying curing compounds                  D) ponding with water.
101. Massive building shapes are advantageous in
- A) hot humid zone                                  B) hot arid zone  
C) cool zone                                          D) temperate zone.
102. Isolated dense town planning layout is suitable for
- A) hot humid zone                                  B) hot arid zone  
C) cool zone                                          D) temperate zone.
103. Evaporative cooling works best in which of the following climates ?
- A) Warm-humid                                      B) Temperate  
C) Hot-dry                                              D) Tropical.
104. Rate of heat flow ( flow of energy per unit time ) through unit area of unit thickness of the material, when there is a unit temperature difference between the two sides is called
- A) *K*-value                                              B) conductance  
C) *U*-value                                              D) *E*-value.
105. In climatic design which of the following processes aptly describes the term 'Balancing in time' ?
- A) Selection of the size and capacity of heating and cooling installation  
B) Selection of a construction with an appropriate time lag  
C) Dissipation of heat stored in the building envelope  
D) The rate of transmission of heat from one particle to the other.

106. What is meant by 'dew-point temperature' ?
- A) When temperature is 15°C                      B) When RH reaches 100%
- C) When temperature is - 4°C                      D) When RH reaches 80%.
107. What is a 'Plenum System' ?
- A) Removing used air and letting fresh air find its way through grilles and openings
- B) Both supplying and removing air
- C) Supplying air into a space and forcing out the used air through grilles
- D) Supplying air into a space which passes over a coolant.
108. What is the 'Greenhouse effect' ?
- A) When the indoor temperature is far above the outdoor temperature
- B) When the outdoor temperature is far above the indoor temperature
- C) When CO<sub>2</sub> levels are low indoors
- D) When heat gain is enabled by solar radiation entering through a window.
109. When diurnal variations produce an approximately repetitive 24-hour cycle of increasing and decreasing temperatures from environment to building and vice-versa it is called
- A) steady state conditions                      B) thermal conductivity
- C) thermal diffusivity                      D) periodic heat flow.
110. With respect to building shading devices what is meant by 'Egg Crate Devices' ?
- A) Horizontal devices
- B) Vertical louvre blades
- C) Combinations of horizontal and vertical elements
- D) Oblique vertical blinds.

111. The idea of enclosed spaces in urban design was pioneered by

- A) Romans  
B) Greeks  
C) Andrea Palladio  
D) Gordon Cullen.

112. Author of 'Ten Books of Architecture' is

- A) Vitruvius  
B) Andrea Palladio  
C) Geoffrey Scott  
D) Lewis Mumford.

113. Ideal cities proposed by Alberti predominantly

- A) concentric  
B) rectilinear  
C) star shape  
D) military post.

114. Antonio Sant'Elia's La Citta Nuova is

- A) futuristic city based on motion  
B) industrial township  
C) neighbourhood  
D) underwater city.

115. Concept of eyes on the street is all about

- A) visual link between private & public spaces  
B) to induce more commercial development  
C) to encourage mixed use development  
D) providing view windows.

116. Which one of the following cities is the example for sheet form ?

- A) Dallas  
B) Los Angeles  
C) San Francisco bay  
D) Copenhagen.

117. Concept of serial vision is employed in

- A) Canary Wharf, London
- B) New Mumbai
- C) Approach to Rashtrapati Bhawan
- D) I.I.M., Ahmedabad.

118. The city of Bhubaneswar was designed by

- A) B.V. Doshi
- B) Joseph Allen Stein
- C) Hargovind K. Mewada
- D) Otto Koenisberger.

119. Who said 'The materials of city planning are sky, space, trees, steel & cement, in this order and in this hierarchy' ?

- A) Le Corbusier
- B) F.L. Wright
- C) Lewis Mumford
- D) Maxwell Fry.

120. Rehabilitation is

- A) to revive the original concept of the building
- B) addition of new material into the building fabric
- C) adaptive use of building
- D) copying to replace missing of decayed part.

121. The output of a 100 W incandescent lamp is

- A) 1360 lumens
- B) 100 lumens
- C) 1000 lumens
- D) 1500 lumens.

122. The typical recommended exterior night time illuminance for security areas around buildings and main shopping streets is

- A) 50 lux horizontal
- B) 20 lux vertical at 1.5 m above ground
- C) 50 lux horizontal with at least 50% of this value on the vertical
- D) 20 lux vertical at 3.0 m above ground.

123. Daytime electrical lighting is not necessary if the average daylight factor is

- A) 2% to 5%
- B) below 2%
- C) 5% or more
- D) 3% to 5%.

124. From a point of safety with respect to fire spread hazard it is not advisable to have a single air system for an area

- A) larger than 1500 sq.m
- B) larger than 1200 sq.m
- C) larger than 1000 sq.m
- D) between 1500 sq.m - 2000 sq.m.

125. Chilled water plants are generally economical only beyond

- A) 40 TR
- B) 80 TR
- C) 60 TR
- D) 50 TR.

126. Which of the following filters are used to remove objectionable odours from the air ?

- A) Electrical filters
- B) Chemical filters
- C) Absolute filters
- D) Carbon filters.



127. In an air conditioning system a linear diffuser performs which of the following functions ?
- A) Distribution of air upto a 50 feet throw and 10 feet - 15 feet spread
  - B) radius of air diffusion equal to its mounting height
  - C) diffusion of air for a radius of 10 feet - 15 feet
  - D) diffusion throw as much as three times its mounting height in one direction itself.
128. In a room air distribution which of the following devices perform the function of distributing air where radius of diffusion is equal to their mounting height ?
- A) Linear diffusers
  - B) Ceiling diffusers
  - C) Floor grills
  - D) Side wall grills.
129. Latent heat load is expressed as
- A) BTU ( kW ) per hour
  - B) BTU
  - C) BTU/hour/sq. foot of area/'F temperature difference
  - D) BTU/hour/sq. foot of area.
130. What is the approximate tonnage ( cooling load ) in a public area (seating space) of an auditorium ?
- A) 100 people/ton
  - B) 150 sq. ft/ton
  - C) 100 sq. ft/ton
  - D) 10 people/ton.
131. Dry rot in timber is due to
- A) lack of ventilation
  - B) wood obtained from dead tree
  - C) excessive seasoning of timber
  - D) shrinkage of the exterior surface.

132. Inter-columniation talks about

- A) height of the columns                      B) treatment of the columns  
C) diameter of the columns                  D) spacing of columns.

133. Which of the following is not a type of proportion ?

- A) Arithmetic                                      B) Harmonic  
C) Generic                                         D) Geometric.

134. Kimbel Art Gallery was designed by

- A) F.L. Wright                                    B) Alvar Alto  
C) Louis I Kahn                                 D) Eric Mendelsohn.

135. Which of the following statements is not true ?

- A) Organic forms possess interest, harmony and clarity  
B) Organic forms are growth and not consciously created  
C) Organic forms arise in nature out of the interplay of innumerable forces that are at work  
D) Organic forms are monotonous.

136. In architecture, 'mass' refers to

- A) weight of the building elements        B) visual effects of a body  
C) composing the building elements       D) overall appearance.

137. Which of the following designers introduced bentwood for furniture making ?

- A) Marcel Bruer                                 B) Charles Eames  
C) Victor Horta                                 D) Michael Thonet.

138. The Bauhaus philosophy was laid down by which of the following architects ?

- A) Mies van der Rohe                         B) Adolf Loos  
C) Walter Gropius                             D) Marcel Bruer.

139. What describes the lightness or darkness of a colour ?
- A) Hue
  - B) Intensity
  - C) Chroma
  - D) Value.
140. What describes the brightness or dullness of a colour ?
- A) Intensity
  - B) Value
  - C) Hue
  - D) Wavelength.
141. What is the safe temperature range for aluminium above which gradual loss of strength occurs ?
- A) 80°C to 100°C
  - B) 70°C to 80°C
  - C) 50°C to 70°C
  - D) 40°C to 50°C.
142. The application of thermo-hardening polyester/polyurethane as a finish to sheet metal/aluminium is called
- A) Anodizing
  - B) Powder coating
  - C) Vitreous enamelling
  - D) Stainless steel.
143. What was the 'Jetty' system of construction ?
- A) Upper floors were projected out over the lower ones
  - B) Roofs were covered with shingles
  - C) Box frame of timber where studs were continuous from ground floor to roof
  - D) Stone masonry protected by a thickness of lime wash.

144. Which of the following buildings by Lars Spuybroek of the Dutch architectural practice Nox has used epoxy covered, CNC milled styrene foam ?
- A) Water Pavilion, Neeltje Islands, Netherlands
  - B) Maison Folie, Lilee, France
  - C) D-Tower, Doetinchem, Netherlands
  - D) Fedurok, Nancy, France.
145. Colour anodizing aluminium sheets to produce black, bronze and grey finishes that resist ultraviolet radiation and abrasion is done by which of the following methods ?
- A) By adding organic dyes
  - B) By adding inorganic pigments
  - C) By electrolytic process
  - D) By post-coating.
146. A concrete mixture that is sprayed over steel reinforcements in light construction, using a special kind of gun is called
- A) Gunite
  - B) Gesso
  - C) Grit
  - D) Resin.
147. Materials which can be decomposed by micro-organisms in the soil, weather, plants and animals is referred to as
- A) compost
  - B) biocompatible
  - C) biodegradable
  - D) recyclable.
148. The lotus leaf's ability to stay clean in muddy environments inspired the making of which of the following materials ?
- A) Self cleansing glass
  - B) Self cleaning exterior paints
  - C) Self cleansing car tyres
  - D) Self cleaning exterior paver blocks.

149. What is meant by thermoforming ?

- A) A process by which a thermoplastic sheet is formed into a 3-D shape
- B) A process by which a material alters appearance and properties when subjected to heat
- C) A process by which a coating is provided over a thermoplastic sheet
- D) A process of shaping a material by forcing it through a die.

150. What is Poisson's ratio ?

- A) The ratio of the radiant power reflected from a material's surface to the radiant power incident on it
- B) The ratio of the speed of light in a vacuum to its speed in the medium under consideration
- C) The ratio of the contraction per lateral unit to the elongation per unit length, which is a constant for a given material within the elastic limit
- D) The ratio of shear stress to the corresponding shear strain for shear stresses below the point at which further stress will create a permanent alteration in the shape of the material.

151. The paint which can withstand extreme degrees of heat and cold is

- A) cellulose paint
- B) asbestos paint
- C) colloidal paint
- D) aluminium paint.

152. The process of heating steel to a point  $40^{\circ}\text{C}$  to  $50^{\circ}\text{C}$  and maintaining at that temperature for a short duration and then cooled down in still air at room temperature is known as

- A) case hardening
- B) tempering
- C) normalising
- D) annealing.

153. Identify the false statement from the following list of statements about the properties of light-weight concrete :

- A) The use of light-weight concrete results in the reduction of cost to the extent of about 30% to 40%
- B) The depth within which corrosion can occur under suitable condition is nearly twice less than that of normal concrete
- C) The light-weight concrete has less tendency to spall due to fire
- D) The sound absorption of light-weight concrete is good.

154. Which of the following is not an insulation material ?

- A) Cork
- B) Vermiculite
- C) Thermocole
- D) Asphalt.

155. Seasoning of timber means

- A) use of matured timber
- B) removal of moisture content from the timber
- C) surface treatment of timbers
- D) cutting of timber into desired size and shape.

156. The cement content in concrete should be

- A) 12% of the total weight of the concrete
- B) 15% of the total weight of the concrete
- C) 8% of the total weight of the concrete
- D) 10% of the total weight of the concrete.

157. The 'modulus of rupture' is determined in bending of an unreinforced concrete beam of size

- A) 15 cm × 10 cm × 50 cm
- B) 15 cm × 15 cm × 50 cm
- C) 15 cm × 15 cm × 70 cm
- D) 15 cm × 10 cm × 70 cm.

158. The main disadvantage of plastics is its

- A) low thermal conductivity
- B) light weight
- C) high thermal expansion
- D) high chemical resistance.

159. Security and decorative grills in buildings are made using

- A) extrusion based aluminium
- B) casting based aluminium
- C) foil and powder based aluminium
- D) sheet based aluminium.

160. 'German silver' is nothing but

- A) Steel alloy
- B) Nickel alloy
- C) Magnesium alloy
- D) Aluminium alloy.

161. Crash cost is

- A) money spent for accidents in the site
- B) cost for extra labour
- C) cost spent due to prolonged time duration
- D) cost spent to complete the activity in a short duration than estimated.

162. Critical path of the network consists of

- A) important activities
- B) events require no urgency in completion
- C) longest path
- D) all the activities that can be delayed.

163. CPM requires

- A) accurate time estimation
- B) past experience
- C) approximate duration
- D) none of these.

164. CPM method is

- A) unidimensional
- B) probabilistic approach
- C) multidimensional
- D) deterministic approach.

165. Free float of an activity is

- A) the difference between maximum time available and actual time required
- B) difference between its EFT & EST of its successor activity
- C) excess of minimum available time over required
- D) tail event stack.

166. Slack is

- A) latest occurrence time - earliest event time
- B) earliest event time - latest occurrence time
- C) total time available
- D) project completion time.

167. Who is the author of the book 'Life and Death of Great American Cities' ?

- A) Jane Jacop
- B) Christopher Alexander
- C) Raymond Unwin
- D) Geoffrey Scott.

168. Agora is

- A) market place
- B) sacred place
- C) assembly complex
- D) uptown.



169. Miletus is

- A) Greek town  
B) Roman colonial post  
C) Market place  
D) Medieval town.

170. Father of Grid iron plan is

- A) Le Corbusier  
B) Lewis Mumford  
C) Hippodamus  
D) Patrick Geddes.

171. Which of the following is the example of Mughal Pleasure Garden ?

- A) Shalimar Bagh, Kashmir  
B) Taj Mahal, Agra  
C) Humayun's Tomb, Delhi  
D) Jallianwala Bagh, Rajasthan.

172. The botanical name of 'Tree of Heaven' is

- A) *Allanthus Altissima*  
B) *Acer Saccharum*  
C) *Betula Lenta*  
D) *Catalpa Speciosa*.

173. The Hall of Nations, New Delhi, Second Hooghly Bridge, Kolkata and ECC's Administrative Office, Chennai have one thing in common. What is it ?

- A) Prestressed concrete  
B) Prefabricated elements  
C) Light-weight materials  
D) Ferrocement.

174. The method of building light framework of wood and placing mud of required thickness around this reinforcement is known as

- A) Pubbled clay and cob  
B) Wattle and daub  
C) Adobe bricks  
D) Compacted soil blocks.

175. 'Compressive and tensile members, arranged in a certain pattern and put together in a system with hinged joints, form mechanisms that can redirect forces and transmit loads over long distances without intermediate supports' describes which of the following structure systems ?
- A) Vector-active structure system
  - B) Height-active structure system
  - C) Section-active structure system
  - D) Surface-active structure system.
176. 'Non-rigid, flexible matter shaped in a certain way and secured by fixed ends and can support itself and span space' describes which of the following structure systems ?
- A) Section-active structure system
  - B) Vector-active structure system
  - C) Surface-active structure system
  - D) Form-active structure system.
177. 'When beams and columns, by means of rigid connections can be combined to form one coactive multi-component system in which each member through deflection of its axis is participating in the mechanism of resisting deformation' describes which of the following structure systems ?
- A) Vector-active structure system
  - B) Section-active structure system
  - C) Surface-active structure system
  - D) Form-active structure system.

178. 'A structure system of rigid solid elements in predominantly vertical extension, in which the redirection of forces is effected through typical height resistant composition of elements' describes which of the following structure systems ?
- A) Surface-active structure system
  - B) Section-active structure system
  - C) Height-active structure system
  - D) Vector-active structure system.
179. Two structure systems with dissimilar mechanics of redirecting forces when locked together to form a single operational construct with new mechanics is called
- A) Vector-active structure system
  - B) Hybridstructure system
  - C) Height-active structure system
  - D) Beam-grid structure system.
180. Which method of project planning is suitable for repetitive type of projects ?
- A) CPM
  - B) PERT
  - C) Bar chart
  - D) Milestone chart.
181. The scheme which provides a serviced land and housing, social facilities and employment opportunities for low income group is
- A) site and services scheme
  - B) slum improvement programme
  - C) environmental improvement scheme
  - D) HUDCO scheme.

182. National Housing Bank established with a view to enlarge the scope of housing in public sector is owned by

- |                      |                          |
|----------------------|--------------------------|
| A) State Governments | B) Reserve Bank of India |
| C) HUDCO             | D) NGO.                  |

183. The term 'UNDP' can be expanded as

- A) United Nations Development Program
- B) Union National Development Program
- C) Urban National Development Program
- D) Union of National Development Programs.

184. The financing institution(s) in the formal sector catering to the rural housing needs is/are

- |        |               |
|--------|---------------|
| A) NHB | B) LIC        |
| C) GIC | D) LIC & GIC. |

185. Which of the following concepts framed by Doxiadis aptly means the inevitable city of the future ?

- |                   |                 |
|-------------------|-----------------|
| A) Anthropocosmos | B) Dynapolis    |
| C) Ecumenopolis   | D) Megalopolis. |

186. What does the term 'Synoecism' mean ?

- A) Administrative coming together of several proximate villages to form a town
- B) Process by which a settlement is the product of a premeditated action.
- C) Process by which a settlement is at least in part the result of premeditated action
- D) Transformation of a village into a town due to migration.

187. The purpose of the outlook tower is
- A) to study the city in relation with its region
  - B) exhibition tower designed by Patrick Geddes
  - C) planning concept postulated by Mumford
  - D) recreational tower.
188. What is upward filtration of housing ?
- A) Non-availability of housing for low income people
  - B) Development of high rise housing
  - C) Housing designed for low income family getting occupied by the higher income families
  - D) Rising cost of housing & services.
189. The first garden city is
- A) Letchworth
  - B) Radburn, New Jersey
  - C) Broad Acre City
  - D) Green Belt, Maryland.
190. What is considered as the grey areas of the city ?
- A) Slums
  - B) Industrial area
  - C) Service quarters of the city
  - D) Commercial districts.
191. The regions having wavelength more than  $10^{-8}$   $\mu\text{m}$  in EMR spectrum is known as
- A) Microwave region
  - B) Thermal infrared region
  - C) Cosmic rays
  - D) X-rays.
192. 'Atmospheric windows' means
- A) openings in the atmospheric cover
  - B) openings in the EMR spectrum
  - C) regions of EMR spectrum, where the atmosphere is transparent
  - D) absence of cloud cover in the atmosphere.

193. The geostationary satellites are launched at a height of
- A) about 1,800 km                      B) about 12,000 km  
C) about 27,000 km                     D) about 36,000 km.
194. The data/information are obtained about any object on the earth's surface by
- A) recording the radiated energy hitting the object  
B) recording the reflected energy by the object  
C) recording the observed energy by the object  
D) all of these.
195. Which of the following statements is not true ?
- A) Active sensing system operates in the infrared region  
B) Passive sensing system operates in the visible region  
C) Active sensing system generates its own energy to illuminate the objects  
D) Passive sensing system mainly depends on solar radiation.
196. In false colour composite, the colours assigned to the image are
- A) Blue, Yellow, Red                      B) Green, Red, Orange  
C) Blue, Green, Red                        D) Yellow, Green, Blue.
197. Which type of housing provides efficient use of land in addition to coherent visual spaces, greater privacy on small lots, effective maintenance, narrow or no sideyards, etc. ?
- A) Walk-up apartment                      B) Row housing  
C) Single family house                     D) Duplex housing.

198. The minimum turn-around at the end of a cul-de-sac should have

- A) 50 feet outside radius free of parking
- B) 50 feet inside radius including parking
- C) 40 feet outside radius free of parking
- D) 40 feet inside radius free of parking.

199. The rat-trap bonding can be used to save

- A) 25% of total bricks and 40% of mortar
- B) 20% of total bricks and 20% of mortar
- C) 30% of total bricks and 50% of mortar
- D) 15% of total bricks and 25% of mortar.

200. FAR is the ratio of

- A) total carpet area to the total area of the plot
- B) total gross area of all storeys of a building to the total area of the plot
- C) total plinth area to the total area of the plot
- D) ground floor carpet area to the total area of the plot.



( SPACE FOR ROUGH WORK )



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