

Q. 1 – Q. 25 carry one mark each.

- Q.1 A Housing Finance Institution in the private sector is
(A) HUDCO (B) SBI (C) PNB (D) HDFC
- Q.2 Which of the following statements regarding PERT is **NOT** true?
(A) Each activity of PERT network has three different time estimates
(B) Expected activity time is estimated based on β -distribution
(C) PERT is a deterministic model
(D) PERT network may have more than one critical path
- Q.3 Damage of foundation due to 'Soil Liquefaction' is related to
(A) Cyclones (B) Landslides (C) Floods (D) Earthquakes
- Q.4 Walls with high thermal inertia are suitable in which type of climate?
(A) Hot-dry (B) Hot-humid (C) Temperate (D) Cold
- Q.5 The ratio of town area to agricultural land area as suggested by Sir Ebenezer Howard in 'Garden City' concept is
(A) 1:20 (B) 1:15 (C) 1:10 (D) 1:5
- Q.6 A 'Demolition Contract' for a building is awarded to the
(A) Lowest Bidder (B) Highest Bidder
(C) Second Lowest Bidder (D) Second Highest Bidder
- Q.7 Bulking of sand is highest in
(A) Coarse sand (B) Medium sand
(C) Fine sand (D) Sand saturated with water
- Q.8 The Venice Charter (1964) led to the establishment of
(A) International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)
(B) International Council on Monuments and Sites (ICOMOS)
(C) Indian National Trust for Art and Cultural Heritage (INTACH)
(D) Archaeological Survey of India (ASI)
- Q.9 The ratio between *illumination at a working point indoor* to *total light available simultaneously outdoor* is known as
(A) Daylight Factor (B) Sky Component
(C) Internally Reflected Component (D) Externally Reflected Component
- Q.10 Which of the following vehicular traffic intersections converts all crossing into merging and diverging sequences?
(A) Rotary (B) Manual Signaling
(C) Grade Separation (D) Automatic Signaling

- Q.11 The process of spraying Polyester, Polyurethane, Acrylic and Epoxy Plastic, followed by heat curing onto metals is called
- (A) Anodizing (B) Galvanizing
(C) Vitreous Enameling (D) Powder Coating
- Q.12 The fundamental right pertaining to property ownership in India **DOES NOT** embrace:
- (A) Sell, Lease, Donate or Bequeath (B) Mortgage
(C) Grant Easement (D) Change in use
- Q.13 Match the **Elements** in Group - I with their **Applications** in Group – II
- | Group – I | Group – II |
|-------------|-------------|
| P Bracket | 1 Door |
| Q Baluster | 2 Dome |
| R Key stone | 3 Cornice |
| S Holdfast | 4 Arch |
| | 5 Staircase |
- (A) P-2, Q-5, R-3, S-1 (B) P-3, Q-5, R-4, S-1
(C) P-3, Q-1, R-4, S-5 (D) P-2, Q-1, R-3, S-4
- Q.14 Match the **Buildings** in Group-I with their **Principal Architects** in Group-II
- | Group – I | Group – II |
|---|------------------|
| P Wexner Centre for the Visual Arts, Ohio | 1 I. M. Pei |
| Q Vitra Fire station, Weilam Rhein, Germany | 2 Peter Eisenman |
| R AT&T Building, New York | 3 Louis Kahn |
| S Sher-e-Banglanagar, Dacca | 4 Zaha Hadid |
| | 5 Philip Johnson |
- (A) P-2, Q-4, R-5, S-3 (B) P-3, Q-5, R-4, S-1
(C) P-1, Q-2, R-5, S-3 (D) P-2, Q-4, R-1, S-5
- Q.15 A combination of colours forming an equilateral triangle in a Colour Wheel is called
- (A) Analogous Scheme (B) Triad Scheme
(C) Split Complementary Scheme (D) Double Complementary Scheme
- Q.16 Desire Line diagram helps in
- (A) completion of a project by a desired date
(B) meeting demand and supply in desired category of housing
(C) determining income versus expenditure pattern of individuals
(D) Origin-Destination analysis in transport planning
- Q.17 As per Fire Safety norms of NBC India for buildings having assembly and institutional occupancies, the maximum travel distance in meters to an exit from the dead end of a corridor is
- (A) 30 (B) 24 (C) 12 (D) 6
- Q.18 Which of the following is a part of a studio apartment?
- (A) Master bed room (B) Artist's room
(C) Multipurpose space (D) Children's room

- Q.19 The Saturation level of a colour represents
 (A) distribution (B) brilliance (C) darkness (D) warmth
- Q.20 Invert level of a pipe at a given cross section refers to the
 (A) highest point of the internal surface (B) lowest point of the internal surface
 (C) highest point of the external surface (D) lowest point of the external surface
- Q.21 The command DVIEW in AutoCAD permits to view
 (A) a selected portion of the drawing in detail
 (B) the entire screen on the monitor
 (C) a perspective of the drawing
 (D) a damaged part of the drawing
- Q.22 Match the **Land use categories** of Group – I with their respective **Colour codes** in Group – II as per practice in India

Group – I	Group – II
P Residential	1 Red
Q Commercial	2 Grey
R Industrial	3 Blue
S Public / Semi-public	4 Violet
	5 Yellow
(A) P – 5, Q – 3, R – 4, S – 1	(B) P – 5, Q – 4, R – 2, S – 1
(C) P – 1, Q – 2, R – 4, S – 5	(D) P – 1, Q – 3, R – 2, S – 4

- Q.23 A rectangular beam section of size 300 mm (width) X 500 mm (depth) is loaded with a shear force of 600 kN. The maximum shear stress on the section in N/mm^2 is _____
- Q.24 In a 50 meter section of a waste water pipe, if the gradient is 1 in 80, then the fall in millimeter is _____
- Q.25 A 15 meter long and 3 meter wide driveway needs to be paved with 300 mm X 300 mm square tiles. If each packet contains 30 numbers of tiles, then the number of packets to be procured to pave the whole area is _____

Q. 26 – Q. 55 carry two marks each.

- Q.26 Match the **Monuments** in Group-I with their **Features** in Group-II

Group-I	Group-II
P Panch Mahal, Fatehpur Sikri	1 Painted Stone Figures
Q Meenakshi Temple, Madurai	2 Intricate Red Sand Stone Carvings
R Jor-Bangla Temple, Bishnupur	3 Granite Statues
S Sun Temple, Konark	4 Khondalite Stone Work
	5 Terracotta Carvings
(A) P – 2, Q – 1, R – 4, S – 3	(B) P – 2, Q – 1, R – 5, S – 4
(C) P – 2, Q – 4, R – 1, S – 3	(D) P – 1, Q – 5, R – 5, S – 4

Q.27 Match the **Monuments** in Group-I with their **Style of Architecture** in Group-II

Group-I	Group-II
P Pisa Cathedral, Italy	1 Gothic
Q St. Hagia Sophia, Istanbul	2 Moorish
R Great Temple of Aman, Karnak	3 Egyptian
S Cathedral of Notre Dame, Paris	4 Byzantine
	5 Romanesque
(A) P – 5, Q – 1, R – 3, S – 2	(B) P – 2, Q – 4, R – 3, S – 5
(C) P – 4, Q – 2, R – 5, S – 1	(D) P – 5, Q – 4, R – 3, S – 1





Q.28 Match the **Buildings** in Group-I with their **Style of Architecture** in Group-II

Group-I	Group-II
P Rashtrapati Bhawan, New Delhi	1 Industrial Architecture
Q German Pavilion for World Exhibition, Barcelona	2 Deconstruction
R Guggenheim Museum, Bilbao	3 Radical Eclecticism
S Crystal Palace, London	4 International Style
	5 Neo Classical
(A) P – 5, Q – 3, R – 2, S – 1	(B) P – 5, Q – 4, R – 2, S – 1
(C) P – 1, Q – 5, R – 4, S – 3	(D) P – 3, Q – 4, R – 1, S – 5

Q.29 Match the **Terms** in Group – I with their **Definitions** in Group – II

Group-I	Group-II
P Kinesthesia	1 Measurement and study of size and proportions of human body
Q Anthropometry	2 Study of man – machine interaction
R Ergonomics	3 Study of past and present of the human race
S Biomimicry	4 Study of human sensory experience during movement
	5 Imitation of models, systems and elements of nature
(A) P – 5, Q – 3, R – 4, S – 1	(B) P – 5, Q – 2, R – 4, S – 3
(C) P – 4, Q – 1, R – 2, S – 5	(D) P – 4, Q – 1, R – 2, S – 3

Q.30 Match the following **Urban Spaces** in Group-I with their **Names** in Group-II

	Group-I	Group-II
P		1 Piazza del Campo, Sienna
Q		2 Forum, Rome
R		3 Trafalgar Square, London
S		4 Agora, Athens
		5 St. Peter's Square, Rome

(A) P - 4 , Q - 1 , R - 2 , S - 3
 (B) P - 2 , Q - 3 , R - 1 , S - 5
 (C) P - 4 , Q - 3 , R - 1 , S - 5
 (D) P - 2 , Q - 1 , R - 4 , S - 3

Q.31 Match the **Terms** in Group-I with the appropriate **Items** in Group-II

	Group-I	Group-II
P	Toposheet	1 Path/Row
Q	Satellite Image	2 Contour
R	Wavelength	3 Focal Length
S	Scan Line	4 Spectral Signature
		5 Bits/inch

(A) P - 5 , Q - 4 , R - 2 , S - 1
 (B) P - 5 , Q - 1 , R - 4 , S - 3
 (C) P - 2 , Q - 1 , R - 4 , S - 5
 (D) P - 2 , Q - 4 , R - 1 , S - 5

Q.32 Match the **Concepts** in Group – I with their appropriate **Explanation** in Group – II

Group-I		Group-II	
P	Planned Unit Development	1	Development occurring on vacant or underused lots in otherwise built up areas
Q	Infill Development	2	Development providing a fair and equitable way to integrate peri-urban areas
R	Transit Oriented Development	3	Developing a large area as a single entity merging zoning and subdivision control
S	Mixed Use Development	4	Development with compatible land uses integrating varied activities at different times of the day
		5	Development located within walking distance from mass transit stations along the corridor
(A) P – 3, Q – 2, R – 5, S – 4		(B) P – 3, Q – 1, R – 5, S – 4	
(C) P – 2, Q – 1, R – 4, S – 5		(D) P – 2, Q – 4, R – 1, S – 5	

Q.33 Particles of soil in **descending order** of grain size is

- (A) Gravel – Sand – Silt – Clay
 (B) Gravel – Sand – Clay – Silt
 (C) Sand – Gravel – Clay – Silt
 (D) Clay – Gravel – Sand – Silt

Q.34 Match the **Units** in Group – I with their **Definitions** in Group – II

Group-I		Group-II	
P	Hertz	1	Newton - meter
Q	Lux	2	Cycles / second
R	Joule	3	Lumen / m ²
S	Newton	4	Watt / ampere
		5	kg - meter / sec ²
(A) P – 5, Q – 4, R – 2, S – 1		(B) P – 3, Q – 1, R – 5, S – 4	
(C) P – 2, Q – 3, R – 1, S – 4		(D) P – 2, Q – 3, R – 1, S – 5	

Q.35 Match the **Energy Efficient Building Elements** in Group-I with their associated **Working Principles** in Group-II

Group-I		Group-II	
P	Solar Chimney	1	Thermal Storage
Q	Earth Air Tunnel	2	Radiant Cooling
R	Trombe Wall	3	Stack Effect
S	Chilled Slab	4	Cross Ventilation
		5	Geothermal Energy
(A) P – 3, Q – 2, R – 4, S – 5		(B) P – 5, Q – 2, R – 4, S – 3	
(C) P – 3, Q – 5, R – 1, S – 2		(D) P – 4, Q – 5, R – 1, S – 2	

Q.36 Match the **Vibrator Types** in Group-I with their related **Areas of Application** in Group-II

Group-I		Group-II
P	Needle Vibrator	1 Concrete Pavement
Q	Shutter Vibrator	2 Pre-cast Concrete Unit
R	Surface Vibrator	3 Beam-Column Junction
S	Table Vibrator	4 Retaining Wall
		5 Slip Forming
(A)	P – 1, Q – 5, R – 4, S – 3	(B) P – 3, Q – 4, R – 1, S – 2
(C)	P – 1, Q – 4, R – 2, S – 5	(D) P – 3, Q – 5, R – 1, S – 2

Q.37 Match the type of **Temporary Structures** in Group – I with their corresponding **Functions** in Group – II

Group-I		Group-II
P	Scaffolding	1 To support unsafe structure
Q	Formwork	2 To support platforms for workmen and materials at raised height during construction
R	Shoring	3 Removal of water from pits
S	Underpinning	4 Mould for RCC Structure
		5 Strengthening the existing foundation
(A)	P – 2, Q – 4, R – 1, S – 5	(B) P – 3, Q – 5, R – 1, S – 2
(C)	P – 3, Q – 4, R – 5, S – 2	(D) P – 2, Q – 3, R – 4, S – 5

Q.38 Match following **Scientific Names** in Group – I with their common **Indian Names** in Group – II

Group-I		Group-II
P	Lagerstroemia speciosa	1 Amaltas
Q	Cassia fistula	2 Neem
R	Azadarachta indica	3 Jarul
S	Acacia auriculiformis	4 Babul
		5 Peepal
(A)	P – 2, Q – 4, R – 3, S – 5	(B) P – 5, Q – 3, R – 2, S – 4
(C)	P – 3, Q – 1, R – 4, S – 2	(D) P – 3, Q – 1, R – 2, S – 4

Q.39 A man starts from his residence and uses the following modes in sequence to reach his office - cycle rickshaw to railway station, then train to destination station, followed by auto-rickshaw to nearby bus stand and finally a bus to his office. Which of the following describes his sequence of transit usage?

- (A) Non Motorised Transit – Paratransit – Mass Transit – Public Transit
 (B) Paratransit – Public Transit – Non Motorised Transit – Mass Transit
 (C) Private Transit – Public Transit – Non Motorised Transit – Mass Transit
 (D) Non Motorised Transit – Mass Transit – Paratransit – Public Transit

Q.40 PMGSY and JNNURM are two Indian Government programmes which deal with

- (A) rural road development and urban basic service improvement respectively
 (B) rural sanitation services and under-developed road maintenance respectively
 (C) peri-urban basic services and urban basic service improvement respectively
 (D) rural road development and urban transport development respectively

Q.41 Match the **Planning Terms** in Group – I with their **Descriptions** in Group – II.

Group-I	Group-II
P Gentrification	1 Haphazard and low density outward growth of urban area
Q Urban core revitalization	2 Primarily dormitory settlement with functional dependency on parent city
R Urban sprawl	3 Replacement of low income residents with high income population
S Satellite town	4 Physical and socio-economic revival of the inner-city
	5 Restricted development in an environmentally sensitive zone
(A) P – 4, Q – 3, R – 5, S – 2	(B) P – 3, Q – 4, R – 1, S – 5
(C) P – 1, Q – 5, R – 2, S – 3	(D) P – 3, Q – 4, R – 1, S – 2

Q.42 Match the **Planning Concepts** in Group – I with their **Corresponding Proponents** in Group – II

Group-I	Group-II
P Broadacre city	1 Le Corbusier
Q Radiant city	2 F. L. Wright
R Industrial town	3 Robert Owen
S Arcosanti	4 Henry Wright
	5 Paolo Soleri
(A) P – 1, Q – 4, R – 3, S – 5	(B) P – 1, Q – 3, R – 5, S – 2
(C) P – 2, Q – 1, R – 3, S – 5	(D) P – 2, Q – 1, R – 5, S – 4

Q.43 The housing stock of a town has total number of 9090 dwelling units. Present population of the town is 45,450. Assuming an average household size of 4.5, the housing shortage in percentage is _____

Q.44 A hall is 15 m long and 12 m wide. If the sum of areas of the floor and ceiling is equal to the sum of the area of its four walls, then the volume of the hall in cubic meter is _____

Q.45 The actual roof area of a building is 3,60,000 sqm, which on a site plan measures 25 sqcm. The scale of the site plan is 1 : _____

Q.46 If the annual net income from a commercial property is Rs 22,000/- and the interest rate is 8%, then the capitalized value in rupees of the property in perpetuity is _____

Q.47 A five storied building is constructed on a 100 m x 50 m plot having ground coverage of 60% (option 1). Alternatively, a four storied building is constructed on the same plot with a 50% ground coverage (option 2). The ratio of FARs between options 1 and 2 is _____

Q.48 If a roof is treated with a layer of thermal insulation material, the internal heat gain is reduced by 60%. The U-value of the roof slab (without thermal insulation) is $3 \text{ W m}^2 / ^\circ\text{C}$. Assuming a constant temperature difference between indoor and outdoor, the U-value of the thermal insulation layer in $\text{W m}^2 / ^\circ\text{C}$ is _____

Q.49 A simply supported beam having effective span of 5 meter is carrying a centrally concentrated load of 16 kN. The maximum bending moment in the beam in kN-m is _____

- Q.50 A landscaped garden with irregular profile and minor undulations, measuring 35,000 sqm, has a total surface area covered with 20% brick paving, 15% cement concrete paving, and rest with grass. The peak intensity of rainfall in that region is 70 mm/hr. The coefficient of runoff for brick paving, cement concrete paving and grass is 0.8, 0.9 and 0.5 respectively. The estimated quantity of runoff in cubic meter/hr for the entire garden area is _____
- Q.51 The number of standard cement bags required to prepare 1400 kg of concrete in the ratio of 1 : 2 : 4 (mixed by weight batching) is _____
- Q.52 A class room measuring 10 m (L) x 8 m (B) x 2.7 m (H) requires an illumination level of 500 lux on the desk level using 40 W fluorescent lamps with rated output of 5000 lumens each. Assuming utilization factor of 0.5 and maintenance factor of 0.8, the number of lamps required is _____
- Q.53 Area of tensile steel per meter width of a reinforced concrete slab is 335 sq mm. If 8 mm rods are used as reinforcement, then centre to centre spacing of the reinforcement in mm is _____
- Q.54 The population of a town as per Census 2011 was 22,730 and the population as per census 2001 was 15,770. Considering arithmetic projection of growth, the projected population in 2016 will be _____
- Q.55 Two concrete mixers of capacity 200 liters each are used in a construction site to produce 20 cubic meter of concrete. Ingredient charging, mixing and discharge times are 3 minutes, 7 minutes and 1 minute respectively. Assuming a time loss of 5 minutes per hour of operation, the total time in hours for the mixers to produce the required amount of concrete will be _____

END OF THE QUESTION PAPER