Sample Paper

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AR: Architecture and Planning

Q.No. 1 A sanitary landfill is provided with High Density Poly Ethylene (HDPE) lining along the ground surface. This is provided primarily to prevent

(A) Bleaching

(B) Leaching

(C) Rodents

(D) Plant growth

Answer: (B)

Q.No. 2 Match the terms in Group I with the parameters in Group II

Group I	Group II
(P) Frontal Area Density	(1) Active Green Area
(Q) Sky View Factor	(2) Urban Density in Third Dimension
(R) Drift Index	(3) Built Density in Two Dimension
(S) Biotope Factor	(4) Lateral Stiffness
	(5) Cross Sectional Property of Urban Canyon

(A) P-2, Q-5, R-4, S-1

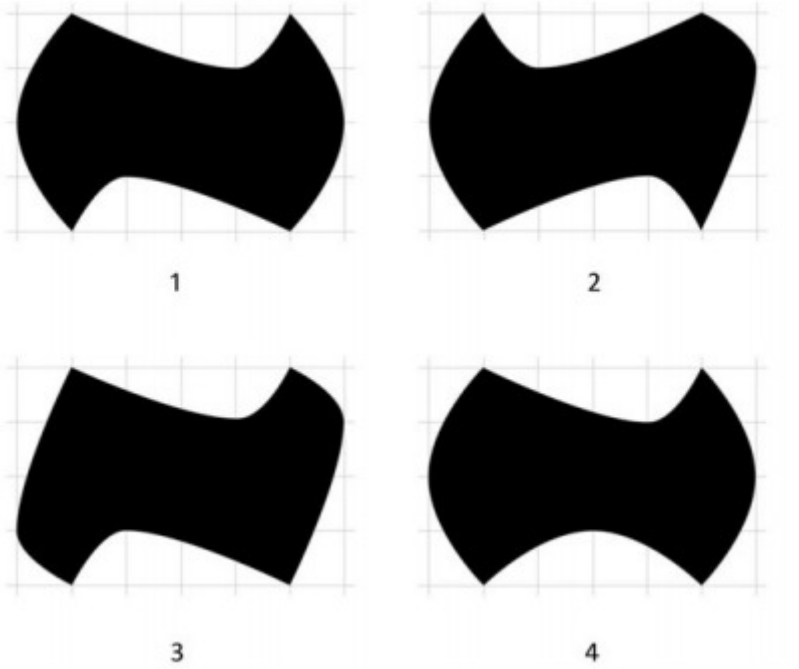
(B) P-3, Q-2, R-1, S-4

(C) P-2, Q-3, R-4, S-5

(D) P-3, Q-4, R-5, S-1

Answer: (A)

Q.No. 3 Which of the following shapes can be used as an interlocking paver block without adding any other shape?



(A) 1

(B) 2

(C) 3

(D) 4

Answer: (C)

Q.No. 4 Match the planning principles in Group-I with their descriptions in Group-II

	Group-I		Group-II
P	Transit oriented development	1	Four stage model of regional development
Q	Core periphery theory	2	Compact and walkable mixed use development
R	Bid rent theory	3	Geographic concentration of inter-connected institutions
S	Cluster theory	4	Change of land price with relative distance from the CBD
		5	Interactive and participatory planning process

(A) P-2, Q-1, R-4, S-3

(B) P-2, Q-1, R-5, S-3

(C) P-4, Q-2, R-5, S-3

(D) P-2, Q-3, R-5, S-4

Answer: (A)

Q.No. 5 Which of the following parameters is essential to estimate the Envelope Performance Factor (EPF) of a building as per the Energy Conservation Building Code (ECBC), 2011?

(A) Building Type

(B) Maximum humidity

(C) Maximum and minimum monthly temperature

(D) Building occupancy duration

Answer: (D)

Q.No. 6 The Pritzker Architecture prize for the year 2016 has been awarded to

(A) Alejandro Aravena

(B) Frei Otto

(C) Stephen Breyer

(D) Yung Ho Chang

Answer: (A)

Q.No. 7 The solar protection system consisting of fixed slats or grids, outside a building façade in front of openings, is known as

(A) Brise–soleil

(B) Solarium

(C) Malqaf

(D) Trombe wall

Answer: (A)

Q.No. 8 Match the equipment in Group-I with their applications in Group-II.

Group-I	Group-II
P. PIR	1. Air conditioning
Q. FCU	2. Lighting
R. OLED	3. Power generation
S. BIPV	4. Motion detection
	5. Daylight sensing

(A) P-4, Q-5, R-2, S-1

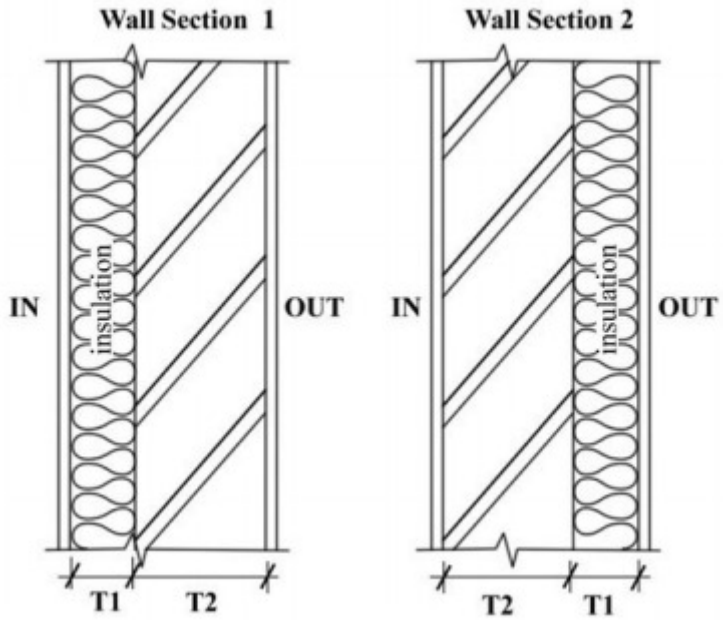
(B) P-1, Q-4, R-5, S-3

(C) P-4, Q-1, R-2, S-3

(D) P-4, Q-2, R-5, S-1

Answer: (C)

Q.No. 9 For the same thickness Of material layers, relative position Of insulation in the wall sections 1 and 2 shown below will have an impact on



(A) Thermal Time Constant

(B) Thermal Conductivity

(C) Thermal Resistivity

(D) Thermal Transmittance

Answer: (A)

Q.No. 10 Match the Architects in Group I with their projects in Group II

Group I	**Group II**
(P) Victor Horta	(1) Farnsworth House
(Q) Gerrit Rietvelt	(2) Robie House
(R) Mies van der Rohe	(3) Tassel House
(S) Frank Lloyd Wright	(4) Schroder House
	(5) Vanna Ventury House

(A) P-3, Q-4, R-1, S-2

(B) P-2, Q-5, R-4, S-1

(C) P-4, Q-3, R-1, S-2

(D) P-3, Q-4, R-5, S-2

Answer: (A)

Q.No. 11 The CARTOSAT 2C satellite recently launched by ISRO

(A) is a geo-synchronous satellite

(B) is a part of IRNSS GPS satellite system

(C) was launched using a GSLV rocket

(D) has high spatial resolution

Answer: (D)

Q.No. 12 Match the building materials in Group-I with their distinctive properties in Group-II

	Group-I		**Group-II**
P	Cement	1	Charring
Q	Steel	2	Brittle
R	Wood	3	Evaporation
S	Glass	4	Tensile strength
		5	Setting Time

(A) P-5, Q-3, R-2, S-1

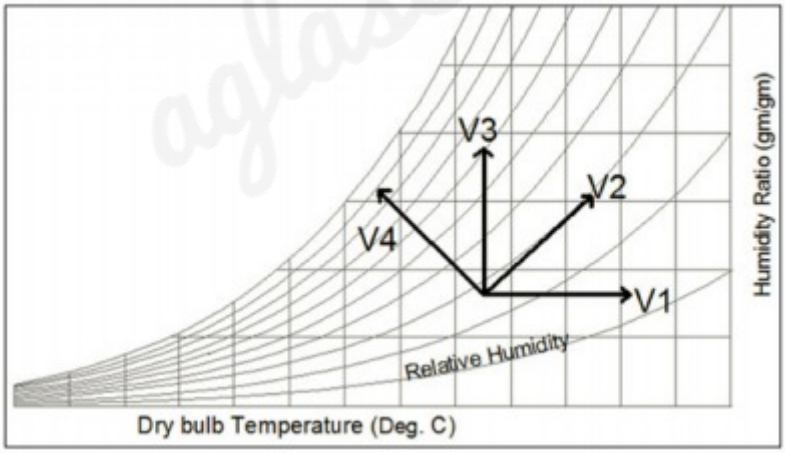
(B) P-5, Q-4, R-1, S-2

(C) P-1, Q-4, R-5, S-2

(D) P-4, Q-3, R-1, S-5

Answer: (B)

Q.No. 13 Based on the psychrometric chart given below, match the vector in Group I with the respective process in Group II



Group I		**Group II**
(P)	V1	(1) Heating and humidification
(Q)	V2	(2) Cooling and humidification
(R)	V3	(3) Heating and dehumidification
(S)	V4	(4) Sensible heating
		(5) Humidification

(A) P-4, Q-1, R-5, S-2

(B) P-4, Q-3, R-1, S-5

(C) P-5, Q-3, R-4, S-1

(D) P-3, Q-1, R-5, S-2

Answer: (A)

Q.No. 14 Match the development schemes by Government of India in Group-I with their objectives in Group-II.

Group-I	Group-II
P. PMAY	1. Housing for All
Q. AMRUT	2. Rural cluster development
R. NRuM	3. Heritage city development
S. HRIDAY	4. Urban mobility improvement
	5. Urban rejuvenation

(A) P-1, Q-5. R-4, S-3

(B) P-1, Q-5, R-2, S-3

(C) P-3, Q-5, R-1, S-2

(D) P-4, Q-2, R-1, S-5

Answer: (B)

Q.No. 15 During the construction of tall buildings, the equipment used for hoisting building materials to the upper floors is a

(A) Goods lift

(B) Capsule lift

(C) Gantry crane

(D) Tower crane

Answer: (D)

Q.No. 16 Match the planning tasks in Group I with the tools of analysis in Group II

Group I	Group II
(P) Population projection	1. Input-Output Analysis
(Q) Regional resource allocation	2. Hardy Cross Method
(R) Trip distribution	3. Cohort Analysis
(S) Design of water distribution network	4. Gravity Model
	5. Moving observer method

(A) P-3, Q-4,R-4,S-2

(B) P-3, Q-5, R-4,S-1

(C) P-5, Q-3,R-3,S-4

(D) P-1, Q-3, R-5,S-2

Answer: (A)

Q.No. 17 In a mono-centric urban model, land rent is expected to

(A) diminish as one moves towards the center

(B) diminish as one moves away from the center

(C) remain constant across the whole urban area

(D) be unrelated with distance from center

Answer: (B)

Q.No. 18 The unit of measurement of Damp Proof Course (DPC) in building construction is

(A) kg

(B) cum

(C) sqm

(D) rm

Answer: (C)

Q.No. 19 'Area based development' and 'Pan city development' are part of

(A) Smart City Mission

(B) Digital India Mission

(C) Swachh Bharat Mission

(D) Atal Innovation Mission

Answer: (A)

Q.No. 20 Complementary colours in a Munsell pigment colour wheel refers to

(A) Colours in alternate positions

(B) Colours opposite to one another

(C) Colours adjacent to each other

(D) A pair of secondary colours

Answer: (B)

Q.No. 21 Match the Buildings in Group-I with their Architects in Group-II

	Group-I		**Group-II**
P	Guggenheim Museum, Bilbao	1	Richard Rogers
Q	The Shard, London	2	Norman Foster
R	Commerz Bank, Frankfurt	3	Frank Gehry
S	Heydar Aliyev Centre, Baku	4	Renzo Piano
		5	Zaha Hadid

(A) P-3, Q-4, R-2, S-5

(B) P-3, Q-4, R-1, S-2

(C) P-2, Q-4, R-1, S-5

(D) P-2, Q-5, R-4, S-3

Answer: (A)

Q.No. 22 In a Colour Wheel, Red and Blue colours are

(A) Tertiary

(B) Complementary

(C) Secondary

(D) Primary

Answer: (D)

Q.No. 23 The structural grid type shown in the figure below is a

(A) Tartan Grid

(B) Square Grid

(C) Rectangular Grid

(D) Irregular Grid

Answer: (A)

Q.No. 24 Which of the following processes is NOT used for corrosion resistance of cast iron?

(A) Painting

(B) Epoxy coating

(C) Quenching

(D) Galvanizing

Answer: (C)

Q.No. 25 Bamboo is a type of

(A) Shrub

(B) Timber

(C) Evergreen tree

(D) Perennial grass

Answer: (D)

Q.No. 26 Which One Of the following is NOT a land use zone?

(A) Industrial Zone

(B) Agriculture Zone

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(C) Heritage Zone

(D) Commercial Zone

Answer: (C)

Q.No. 27 'Formulation of GIS based master plan' is a sub-scheme of

(A) Atal Mission for Rejuvenation and Urban Transformation

(B) Smart Cities Mission

(C) Jawaharlal Nehru National Urban Renewal Mission

(D) Shyama Prasad Mukherji Rurban Mission

Answer: (A)

Q.No. 28 One of the sites added to the list Of UNESCO World Heritage Sites in 2019 is

(A) Walled City, Ahmedabad

(B) Walled City, Jaipur

(C) Chandigarh

(D) Fatehpur Sikri

Answer: (B)

Q.No. 29 Match the iconic architectural examples in Group-I with their predominant structural systems in

	Group-I		**Group-II**
P	S. Maria del Fiore Cathedral, Florence	1	Shell
Q	Notre Dame Cathedral, Paris	2	Suspended roof
R	Olympic Arena, Tokyo	3	Space frame
S	Bahá'i Temple, Delhi	4	Double-walled dome
		5	Flying buttress

Group-II

(A) P-1, Q-3, R-5, S-4

(B) P-4, Q-1, R-2, S-3

(C) P-4, Q-5, R-2, S-1

(D) P-5, Q-4, R-3, S-2

Answer: (C)

Q.No. 30 Emergency preparedness for risk reduction does NOT include

(A) rescue

(B) relief distribution

(C) rehabilitation

(D) revision of code

Answer: (D)

Q.No. 31 Which of the following projection types is adopted in the Universal Transverse Mercator (UTM)?

(A) Spherical

(B) Conical

(C) Planar

(D) Cylindrical

Answer: (D)

Q.No. 32 The Indian property inscribed by UNESCO on the World Heritage List in the year 2018 is

(A) Mattanchery Palace, Ernakulam

(B) The Victorian Gothic and Art Deco Ensembles of Mumbai

(C) Ancient Buddhist Site, Sarnath

(D) Mughal Gardens in Kashmir

Answer: (B)

Q.No. 33 Which of the following trees has a columnar form?

(A) Delonix regia

(B) Tamarindus indica

(C) Polyalthia longifolia

(D) Callistemon lanceolatus

Answer: (C)

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Q.No. 34 Match the images of gardens in Group I with their names in Group II

Group I		Group II
(P)		(1) Central Park, New York
(Q)		(2) Versailles, Paris
(R)		(3) Nishat Bagh, Srinagar
(S)		(4) Katsura Imperial Garden, Kyoto
		(5) Alhambra Moorish Garden, Granada

(A) P-5, Q-3, R-1, S-4

(B) P-3, Q-4, R-1, S-2

(C) P-1, Q-4, R-3, S-2

(D) P-3, Q-2, R-4, S-5

Answer: (B)

Q.No. 35 Assuming other variables remaining constant, the Tropical Summer Index

(A) Increases with increase in air velocity

(B) Decreases with increase in wet-bulb temperature

(C) Decreases with increase in globe temperature

(D) Increases with increase in vapour pressure

Answer: (D)

Q.No. 36 Sidi Bashir Mosque with ‘Shaking Minarets’ is located in

(A) Ajmer

(B) Allahabad

(C) Ahmedabad

(D) Amritsar

Answer: (C)

Q.No. 37 The term ‘Necropolis’ refers to

(A) Organically growing settlement

(B) Origin of a settlement

(C) A dead settlement

(D) Merging of two settlements

Answer: (C)

Q.No. 38 Match the architectural projects in Column - I with the architect in Column - II, and select the appropriate option.

Column - I		Column - II	
P	India Habitat Centre, New Delhi	**1**	Christopher Charles Benninger
Q	United World Colleges (UWC), Mahindra College, Pune	**2**	Charles Correa
R	Brain & Cognitive Science Centre – MIT, Cambridge	**3**	Joseph Allen Stein
S	Habitat 67, Montreal	**4**	Norman Foster
		5	Moshe Safdi

(A) P-3, Q-1, R-2, S-5

(B) P-1, Q-2, R-5, S-3

(C) P-2, Q-1, R-5, S-4

(D) P-3, Q-4, R-1, S-5

Answer: (A)

Q.No. 39 Select the right option representing strategic components arranged in ascending order of specified minimum area under Smart City Mission of Government of India.

(A) Greenfield development — Redevelopment — Retrofitting

(B) Redevelopment — Greenfield development — Retrofitting

(C) Retrofitting —- Redevelopment — Greenfield development

(D) Redevelopment — Retrofitting — Greenfield development

Answer: (B)

Q.No. 40 Match the scientific names of the trees provided in Column - I with the corresponding color of their bloom in Column - II, and select the appropriate option.

Column - I		Column - II	
P	*Cassia fistula*	**1**	White
Q	*Lagerstroemia flos-reginae*	**2**	Red
R	*Cordia sebastena*	**3**	Blue
S	*Plumeria alba*	**4**	Yellow
		5	Mauve

(A) P-4, Q-5, R-4, S-1

(B) P-1, Q-5, R-2, S-3

(C) P-5, Q-4, R-1, S-3

(D) P-4, Q-5, R-2, S-1

Answer: (D)

Q.No. 41 The grade-separated interchange suitable for 3-legged road intersection is:

(A) Trumpet

(B) Full Clover leaf

(C) Diamond

(D) Partial Clover leaf

Answer: (A)

Q.No. 42 The Hall of Nations, New Delhi, was designed by

(A) Charles Correa

(B) Raj Rewal

(C) Joseph Allen Stein

(D) A. P. Kanvinde

Answer: (B)

Q.No. 43 Identify the role of Vermiculate in vertical landscapes

(A) Fertilizer

(B) Holding material

(C) Binding material

(D) Water retention element

Answer: (A)

Q.No. 44 The concentric circles in a solar chart represent

(A) Azimuth angle

(B) Altitude angle

(C) Horizontal shadow angle

(D) Vertical shadow angle

Answer: (B)

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Q.No. 45 Match the elements in Group-I with the building components in Group-II

	Group-I		Group-II
P	King post	1	Curtain glazing
Q	Grade beam	2	Door
R	Metal decking	3	Plinth
S	Jamb	4	Intermediate floor
		5	Truss

(A) P-5, Q-3, R-4, S-1

(B) P-2, Q-4, R-3, S-1

(C) P-2, Q-4, R-5, S-3

(D) P-5, Q-3, R-4, S-2

Answer: (D)

Q.No. 46 Excellence in Design for Greater Efficiency (EDGE) programme DOES NOT focus on

(A) lower carbon emission

(B) greater resource efficiency

(C) cost effectiveness

(D) labour safety

Answer: (D)

Q.No. 47 If Beam Column Transom : X, which of the following options can replace 'X'?

(A) Balustrade

(B) Sill

(C) Mullion

(D) Ceiling

Answer: (C)

Q.No. 48 Match the instruments in Column - I with the various types of surveying in Column - II and select the appropriate option.

Column - I		Column - II	
P	Cross staff	**1**	Indoor wall to wall measurement
Q	Alidade	**2**	Traversing
R	Sextant	**3**	Chain survey
S	Distomat	**4**	Plane table survey
		5	Contour survey

(A) P-3, Q-4, R-2, S-5

(B) P-2, Q-4, R-1, S-5

(C) P-5, Q-3, R-2, S-1

(D) P-3, Q-4, R-2, S-1

Answer: (D)

Q.No. 49 The closing syntax, for an executable command line in C or C++ program, is

(A) :

(B) ,

(C) ;

(D) .

Answer: (C)

Q.No. 50 Liquidated damage refers to the

(A) cost borne by the contractor to rectify defects within defect-liability period

(B) compensation paid on breach of contract to the affected party by the other party

(C) money paid by the insurance company to the owner of insured property if it is damaged

(D) money earned by the owner from selling damaged property through auction

Answer: (B)

Q.No. 51 The ingredient to be added to produce Aerated Cement Concrete, is

(A) Aluminum

(B) Calcium chloride

(C) Gypsum

(D) Sulphur

Answer: (A)

Q.No. 52 In a multi-storied building. the type of plumbing system suitable for reusing the sullage for non-potable use is

(A) single stack system

(B) partially ventilated single stack system

(C) one pipe system

(D) two pipe system

Answer: (D)

Q.No. 53 One hectare is equal to

(A) 4000 m^2

(B) 4048 m^2

(C) 4840 m^2

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(D) 10000 m^2

Answer: (D)

Q.No. 54 In a bird's eye perspective view of a cuboid, the maximum number of vanishing points is

(A) 1

(B) 2

(C) 3

(D) 6

Answer: (C)

Q.No. 55 Match the application in the field of construction in the Column - I and the respective items in Column - II and select the appropriate option.

	Column - I		Column - II
P	Polytetrafluoroethylene (PTFE) membrane	**1**	Tendon
Q	Isolated compression component inside a network of continuous tensile member	**2**	TMT
R	Cable used for pre-stressed concreting	**3**	Tensegrity
S	Reinforcement bar used in RCC construction	**4**	TMD
		5	Teflon

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(A) P-5, Q-1, R-4, S-3

(B) P-4, Q-3, R-1, S-5

(C) P-5, Q-3, R-1, S-2

(D) P-3, Q-4, R-2, S-1

Answer: (C)