

MAH M Arch CET Current Architecture Practice

Sample Paper – 10

Duration: 12 Minutes

Maximum Marks: 20

Instructions

- This paper contains **10 multiple-choice questions (MCQs)**.
- Each question carries **+2 marks** for the correct answer.
- There is **no negative marking**.
- Only **one** option is correct for each question.
- Click on the question number to jump to its solution; click **Go Back** in the solution to return to the question.

SECTION V — CURRENT ARCHITECTURE PRACTICE

Q1. The Maharashtra Housing and Area Development Authority (MHADA) was established under the **MHADA Act 1976**. Which of the following statements correctly describes the **primary statutory mandate** of MHADA?

- (A) To act as the appellate authority for development permission disputes under the MRTP Act 1966 in the Mumbai Metropolitan Region.
- (B) To plan, construct, repair, and maintain houses for the benefit of various income groups in the State of Maharashtra, particularly the Economically Weaker Section (EWS), Low-Income Group (LIG), and Middle-Income Group (MIG), and to promote balanced urban development through housing supply.
- (C) To exclusively develop and maintain mass rapid transit corridors and transit-oriented development zones in Maharashtra.
- (D) To regulate real estate projects and agents under the RERA Act 2016 on behalf of the Maharashtra government as the designated regulatory authority.

Q2. As per NBC 2016 Part 10 (Landscape Development, Plantation and Preservation of Trees), which of the following is a correct provision for **minimum green coverage** on a building site?



- (A) NBC 2016 Part 10 recommends that a minimum percentage of the total site area (the precise percentage varying with the development control rules applicable to the locality) be maintained as permeable green/soft landscape area, so that stormwater infiltration and urban heat island mitigation are addressed in addition to complying with setback and open-space provisions.
- (B) Part 10 mandates exactly 30% of every plot, regardless of size or use, to be hard-paved for parking and pedestrian circulation, with no minimum softscape requirement.
- (C) Part 10 requires that all rooftop areas in buildings above six storeys be landscaped with a minimum growing medium depth of 600 mm as a mandatory condition for building permit.
- (D) Part 10 prohibits the removal of any tree within 50 m of a building and mandates transplantation of all existing trees at 1:1 replacement ratio as a pre-condition for commencement of excavation.

Q3. Under **UDCPR 2020**, in the Mumbai Metropolitan Region (MMR) area (excluding the island city of Mumbai), a residential building located on a road of **30 m width or more** may avail a **premium FSI** (paid at a specified premium to the local authority) in addition to the base FSI. The **maximum total permissible FSI** (base + premium, excluding fungible FSI) for such a residential building is:

- (A) 1.5 (base FSI only; no premium FSI is available on roads wider than 24 m under UDCPR 2020).
- (B) 2.0 (a flat cap of 2.0 applies uniformly across all MMR areas regardless of road width).
- (C) 4.0 (the maximum permissible FSI including fungible FSI and affordable housing incentive for buildings on roads ≥ 40 m).
- (D) 3.0 (base FSI of 1.5 plus premium FSI up to 1.5, for a total of 3.0 on roads ≥ 30 m in MMR areas governed by UDCPR 2020).

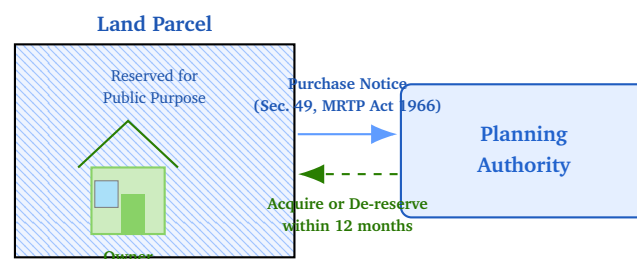
Q4. The **Pradhan Mantri Awas Yojana (Urban)** — “Housing for All by 2022”



— includes several verticals for providing affordable housing. Which of the following is **NOT** a vertical under PMAY-U?

- (A) Beneficiary-Led Construction or Enhancement (BLC), which provides direct financial assistance to eligible urban households owning land to construct or enhance their own house.
- (B) Affordable Housing in Partnership (AHP), which provides central assistance to States/UTs or public/private agencies for constructing affordable houses.
- (C) Rural Housing Finance Scheme (RHFS) — a dedicated rural housing finance subsidy administered by NHB and NABARD for Below Poverty Line (BPL) households in villages.
- (D) In-Situ Slum Redevelopment (ISSR), which uses land as a resource for rehabilitating slum dwellers with private sector participation.

Q5. Under **Section 49 of the MRTP Act 1966**, if an owner of land reserved in the development plan (for a public purpose) finds that the land **cannot be sold in the open market** due to the reservation, the owner may serve a **purchase notice** on the Planning Authority requiring it to acquire the land. What is the time limit within which the Planning Authority must **acquire or de-reserve** the land after receiving such a purchase notice?



Sec. 49, MRTP Act 1966: purchase notice mechanism for reserved land

- (A) 6 months from the date of purchase notice, after which the reservation automatically lapses.
- (B) **12 months** from the date of the purchase notice, within which the Planning Authority must either take steps to acquire the land compulsorily or de-reserve it from the development plan by amending the plan.



- (C) 24 months from the date of purchase notice, reflecting the standard government acquisition timeline under the RFCTLARR Act 2013.
- (D) 36 months from the date of purchase notice, provided the Planning Authority has published a declaration of acquisition intent within the first 12 months.

Q6. In the context of **low-carbon building design**, the term “**embodied carbon**” refers to:

- (A) The greenhouse gas (GHG) emissions associated with the extraction, manufacture, transport, and construction of building materials and components (cradle-to-practical-completion), as well as end-of-life demolition and disposal — i.e., the carbon fixed in the building fabric itself, not arising from building operation.
- (B) The total carbon dioxide equivalent released by the building’s heating, cooling, ventilation, lighting, and plug-load energy consumption during the entire occupied life of the building (operational carbon).
- (C) The net carbon stored in the timber framing and cellulosic insulation materials incorporated in a building’s structure, representing a carbon sink that offsets emissions.
- (D) The carbon credits purchased on the voluntary carbon market to offset the building’s operational emissions, making it “operationally carbon neutral.”

Q7. Under **Section 2(a) of the Architects Act 1972**, the “practice of architecture” is defined to include which of the following?

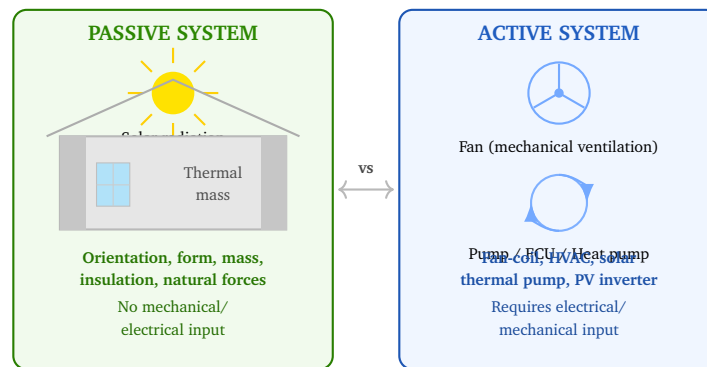
- (A) Only the preparation of structural engineering drawings and calculations for buildings requiring a building permit from the municipal authority.
- (B) Exclusively the supervision and quality control of ongoing construction work on site on behalf of a client under a signed contract.
- (C) Rendering or offering to render services in connection with the design, construction, enlargement, conservation, alteration or any other



work in respect of buildings, as well as the planning and supervision of urban, rural, or regional planning, landscaping, and any other form of development.

- (D) Only the preparation of interior design schemes and space-planning layouts for commercial interiors above 500 sq.m. in area.

Q8. In architectural practice, an “**active**” energy system is one that:



Active vs Passive energy systems — key distinction in building design

- (A) Operates entirely without any form of electrical or mechanical input, relying only on solar radiation and natural air movement — this describes a passive system.
- (B) Generates electricity from renewable sources on-site to achieve net-zero energy balance — this describes on-site generation, which may use active or passive solar technology.
- (C) Is a system designed specifically to use wind energy as its only energy input, such as a wind turbine or a natural cross-ventilation arrangement that uses wind pressure differential.
- (D) Requires external energy input (electrical or mechanical power) to collect, move, or distribute energy — such as fan-coil units, mechanical ventilation systems, pumped solar thermal collectors, photovoltaic inverters, or heat pumps — as distinguished from passive systems that rely solely on building orientation, form, mass, insulation, and natural forces without powered components.



Q9. The **Green Rating for Integrated Habitat Assessment (GRIHA)** rating system, which evaluates the environmental performance of buildings in India, is developed and administered by:

- (A) The Indian Green Building Council (IGBC), a division of the Confederation of Indian Industry (CII), which administers LEED India and other CII-IGBC green building ratings.
- (B) **TERI (The Energy and Resources Institute)** in collaboration with the Ministry of New and Renewable Energy (MNRE), Government of India. TERI developed GRIHA and the ADaRSH society (Association for Development and Research of Sustainable Habitats) administers it.
- (C) The Bureau of Energy Efficiency (BEE) under the Ministry of Power, which administers the BEE Star Label Programme and ECBC compliance ratings for commercial buildings.
- (D) The National Institute of Urban Affairs (NIUA) under the Ministry of Housing and Urban Affairs, which oversees smart city and urban sustainability research.

Q10. In the traditional Indian building science of **Vastu Shastra**, the preferred **primary orientation** for the main entrance (main door) of a residential building to maximise positive energy, natural light, and ventilation, as per the classical Vastu compass (Vastu Purusha Mandala), is:

- (A) **East** (or North-East), as the east direction is associated with the rising sun — the source of morning light, solar energy, and cosmic positive energy in the Vastu system — and is considered the most auspicious direction for the main entrance.
- (B) West, which is considered the direction of sunset and is generally avoided as the primary entrance direction in Vastu Shastra.
- (C) South, which is associated with Yama (the lord of death) in the Vastu system and is strictly avoided as a main entrance direction.
- (D) North-West, which is governed by Vayu (wind deity) and is associated with instability; while a secondary entrance may be acceptable,



it is not recommended as the primary entrance.



SOLUTIONS

Q1.

Solution

Concept: MHADA (Maharashtra Housing and Area Development Authority) was created by the State of Maharashtra under the MHADA Act 1976 to address the acute shortage of affordable housing across different income groups. Understanding its primary statutory mandate distinguishes it from regulatory bodies such as MahaRERA or MMRDA.

Step 1 — Primary mandate under MHADA Act 1976: The MHADA Act 1976 establishes MHADA as a statutory body whose core function is to **plan, construct, repair, and maintain** residential and other buildings for the benefit of people across income categories — particularly **EWS, LIG, and MIG** — in the State of Maharashtra. MHADA allocates housing units through a lottery system and undertakes layout and colony development in major urban centres (Mumbai, Pune, Nashik, Konkan, Aurangabad, Amravati regions). It also promotes balanced urban development by increasing the supply of affordable housing stock.

Step 2 — Why other options are wrong:

- (A) Appellate functions for development permission under the MRTP Act 1966 are vested in the Divisional Commissioner / designated Appellate Authority, not MHADA.
- (C) Mass rapid transit and transit-oriented development are the mandate of MMRDA (Mumbai Metropolitan Region Development Authority), not MHADA.
- (D) Regulation of real estate projects and agents under RERA Act 2016 in Maharashtra is the mandate of MahaRERA (Maharashtra Real Estate Regulatory Authority), not MHADA.

Final Answer:

Answer: (B) [Go Back to Q1](#)



Q2.

Solution

Concept: NBC 2016 Part 10 (Landscape Development, Plantation and Preservation of Trees) is the chapter of the National Building Code dedicated to the landscape and green cover aspect of building sites. It recommends minimum soft-landscape provisions to support stormwater infiltration and mitigate the urban heat island effect, while cross-referencing applicable local Development Control Rules.

Step 1 — NBC 2016 Part 10 green coverage provision: Part 10 recommends that a **minimum percentage of the total site area** be maintained as permeable soft/green landscape (lawn, planting beds, water features, pervious surfaces). The precise percentage is to be read in conjunction with the **local Development Control Rules** (DCR/UDCPR) applicable to the site, as these rules vary by State and local authority. The rationale includes stormwater infiltration to recharge groundwater, reduction of run-off coefficient, shading of hard surfaces, and mitigation of the urban heat island effect, in addition to the visual and recreational amenity value of green areas.

Step 2 — Why other options are wrong:

- **(B)** A fixed 30% hard-paving mandate for all plots regardless of use is not a provision of NBC 2016 Part 10; the Code specifically promotes soft/permeable surfaces and does not impose a universal hard-paving minimum.
- **(C)** Mandatory rooftop landscaping with 600 mm growing medium depth for all buildings above six storeys is not a blanket requirement in NBC 2016 Part 10; rooftop greening provisions, where recommended, are advisory and subject to structural feasibility.
- **(D)** A blanket prohibition on tree removal within 50 m of a building and a mandatory 1:1 transplantation pre-condition is not a provision found in Part 10; tree preservation and transplantation requirements are defined in local tree-preservation orders and municipal bylaws, not in this blanket form in NBC 2016.

Final Answer:

Answer: (A) [Go Back to Q2](#)



Q3.

Solution

Concept: UDCPR 2020 (Unified Development Control and Promotion Rules for Maharashtra 2020) introduced a premium FSI mechanism for the Mumbai Metropolitan Region (MMR) to encourage denser development along wide roads while generating revenue for infrastructure. The base FSI and the premium FSI entitlement depend on road width and zone classification.

Step 1 — UDCPR 2020 premium FSI for residential on roads ≥ 30 m (MMR): In the MMR (areas outside the island city of Mumbai, which is governed by DCPR 2034), the **base FSI for residential use is 1.5**. For buildings on roads of **30 m width or more**, an additional **premium FSI of up to 1.5** may be availed on payment of a prescribed premium to the local authority. This gives a **maximum total FSI (base + premium) of 3.0**, before the addition of fungible FSI or any special incentive FSI (such as affordable housing bonus).

Step 2 — Why other options are wrong:

- (A) 1.5 is the base FSI only; premium FSI is available on roads ≥ 24 m (and especially on roads ≥ 30 m) under UDCPR 2020; stating it is unavailable is incorrect.
- (B) A uniform cap of 2.0 regardless of road width is not the UDCPR 2020 provision; the FSI entitlement increases with road width, and 2.0 is not a defined threshold in the applicable table.
- (C) 4.0 represents the upper end of the permissible FSI when *fungible FSI* and affordable housing incentive FSI are also added; the question specifically asks for base + premium only, excluding fungible FSI.

Final Answer:

Answer: (D) [Go Back to Q3](#)

Q4.

Solution

Concept: PMAY-U (Pradhan Mantri Awas Yojana – Urban), launched in 2015 with the goal of “Housing for All by 2022”, is structured around four verticals tailored to different delivery modes and beneficiary categories in *urban* areas. Rural housing schemes are distinct programmes under different ministries.

Step 1 — Four verticals of PMAY-U:

- (a) **In-Situ Slum Redevelopment (ISSR):** Rehabilitates slum dwellers using land as a resource, with private sector participation on a public–private part-



nership basis.

- (b) **Credit Linked Subsidy Scheme (CLSS):** Provides interest subsidy on home loans for EWS/LIG/MIG beneficiaries purchasing or constructing their first urban home.
- (c) **Affordable Housing in Partnership (AHP):** Central assistance to State Governments/UTs or public/private agencies building affordable housing units.
- (d) **Beneficiary-Led Construction or Enhancement (BLC):** Direct financial assistance to individual EWS households owning land to build or enhance a house.

The **Rural Housing Finance Scheme (RHFS)** is administered by NHB/NABARD for rural BPL households; it is a *rural* scheme and is **not a vertical of PMAY-Urban**.

Step 2 — Why other options are wrong:

- (A) BLC is an officially notified vertical of PMAY-U, providing individual-house construction grants.
- (B) AHP is an officially notified vertical of PMAY-U, supporting State/UT-led affordable housing projects.
- (D) ISSR is an officially notified vertical of PMAY-U, enabling slum rehabilitation with private-sector partnership.

Final Answer: ☒ C

Answer: (C) [Go Back to Q4](#)

Q5.

Solution

Concept: Section 49 of the MRTP Act 1966 protects landowners whose plots are reserved in the Development Plan for a public purpose but whose land cannot be sold in the open market because of that reservation. The “purchase notice” mechanism is the statutory remedy available to such owners, and the Act prescribes a specific time limit for the Planning Authority to respond.

Step 1 — Section 49 time limit: Under Section 49, after the owner serves a purchase notice on the Planning Authority, the Planning Authority has **12 months** from the date of receipt of that notice to either:

- (a) Initiate compulsory acquisition of the land under the relevant acquisition law; or
- (b) De-reserve the land by amending the Development Plan (removing the public-purpose reservation).



If neither action is taken within the 12-month window, the owner may approach the appropriate authority or court. The 12-month limit balances the public interest in retaining reservations against the private owner's right not to be left in indefinite limbo.

Step 2 — Why other options are wrong:

- (A) 6 months is not the Section 49 time limit; and automatic lapse of reservation at 6 months is not a provision of the MRTP Act.
- (C) 24 months is the time limit associated with acquisition proceedings under the RFCTLARR Act 2013 (Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act) — a different statute with a different purpose; it does not govern the Planning Authority's response to a Section 49 purchase notice.
- (D) 36 months, subject to a declaration within 12 months, is not a provision in Section 49 of the MRTP Act 1966.

Final Answer:

Answer: (B) [Go Back to Q5](#)

Q6.

Solution

Concept: In sustainable building design and carbon accounting, two fundamentally distinct categories of building-related carbon emissions are recognised: **embodied carbon** (arising from material production and construction) and **operational carbon** (arising from building energy use during occupation). Conflating these two categories is a common source of error.

Step 1 — Definition of embodied carbon: Embodied carbon refers to the **greenhouse gas emissions associated with all the non-operational phases of a building's life**: extraction of raw materials, processing, manufacture, transport to site, construction on site, replacement of components during service life, and ultimately demolition and disposal (the “cradle-to-grave” boundary). The carbon is *embedded* in the building materials and fabric themselves. It cannot be reduced by improving the building's energy performance during operation; it must be addressed through material choice, sourcing, structural efficiency, and design for deconstruction and reuse.

Step 2 — Why other options are wrong:

- (B) Describes *operational carbon* — the CO₂e released by energy consumed during the building's occupied life (heating, cooling, lighting, equipment).



This is distinct from embodied carbon.

- (C) Describes the concept of *biogenic carbon sequestration* in bio-based materials (timber, hemp insulation). While this is a related concept in whole-life carbon accounting, it does not define embodied carbon itself.
- (D) Describes the purchase of *carbon offsets* to neutralise operational emissions — a financial mechanism entirely separate from the definition of embodied carbon.

Final Answer:

Answer: (A) [Go Back to Q6](#)

Q7.

Solution

Concept: The Architects Act 1972 is the central legislation that regulates the profession of architecture in India. Section 2 provides statutory definitions. Section 2(a) defines “practice of architecture” broadly to encompass the full range of professional services an architect renders, not merely a narrow subset such as structural design or site supervision.

Step 1 — Section 2(a) definition of “practice of architecture”: Under Section 2(a) of the Architects Act 1972, “practice of architecture” means **rendering or offering to render services in connection with the design, construction, enlargement, conservation, alteration, or any other work in respect of buildings, and also includes the planning and supervision of urban, rural, or regional planning, landscaping, and any other form of development.** The definition is deliberately inclusive so that architects who engage in urban design, town planning, landscape, or heritage conservation are equally governed by the Act.

Step 2 — Why other options are wrong:

- (A) Section 2(a) does not restrict “practice of architecture” to structural engineering drawings or calculations; such work is the domain of structural engineers and is not the Act’s definition of architectural practice.
- (B) Restricting the definition to “supervision only” would exclude design, planning, and other core architectural services explicitly listed in Section 2(a); the definition is far broader than supervision alone.
- (D) Limiting the definition to interior design schemes for commercial spaces above 500 sq.m. has no basis in the Architects Act 1972; interior design is not a threshold-based restriction in Section 2(a).

Final Answer:



Answer: (C) [Go Back to Q7](#)

Q8.

Solution

Concept: The distinction between “active” and “passive” energy systems is fundamental in building physics and low-energy design. Passive systems exploit the laws of thermodynamics and fluid dynamics through building form, orientation, and material properties — without any powered components. Active systems require electricity or mechanical power to operate.

Step 1 — Definition of an active energy system: An active energy system is any system that **requires an external energy input — electrical or mechanical power** — to function. Examples include:

- Fan-coil units and air-handling units (HVAC): require electrical power for fans and compressors.
- Mechanical ventilation with heat recovery (MVHR): requires fans driven by electricity.
- Pumped solar thermal collectors: a solar thermal collector array with a circulation pump is “active” because the pump is powered.
- Heat pumps: use electrical energy to transfer thermal energy.
- Photovoltaic inverters: convert DC solar electricity to AC, requiring electronic processing.

In contrast, a *passive* solar wall, natural cross-ventilation opening, or Trombe wall works solely through radiation, conduction, and natural convection — no powered component involved.

Step 2 — Why other options are wrong:

- **(A)** Operating without any electrical or mechanical input describes a *passive* system; this is the opposite of the definition of an active system.
- **(B)** Generating electricity from on-site renewables to achieve net-zero energy balance describes a *net-zero energy building* strategy, not the definition of an active system; the generation equipment (PV array + inverter) is itself an active system, but the concept of net-zero balance is broader.
- **(C)** Using wind energy as the only input describes either a wind turbine (active, in that it has mechanical and electrical components) or natural cross-ventilation (passive, driven by wind pressure without any powered component). Neither characterises all active systems; the definition of active is not restricted to wind energy.



Final Answer:

Answer: (D) [Go Back to Q8](#)

Q9.

Solution

Concept: India has several green building rating systems. GRIHA (Green Rating for Integrated Habitat Assessment) is the national rating system developed specifically for Indian climatic conditions, building typologies, and regulatory context. Knowing its developer and administrator distinguishes it from LEED India (CII-IGBC) and BEE's ECBC Star rating.

Step 1 — GRIHA development and administration: GRIHA was developed by **TERI (The Energy and Resources Institute)**, the leading independent research organisation on energy, environment, and sustainable development in India, in collaboration with the **Ministry of New and Renewable Energy (MNRE)**, Government of India. TERI provides the technical framework, criteria, and training for GRIHA. Day-to-day administration and certification is carried out by **ADaRSH** (Association for Development and Research of Sustainable Habitats), a society set up for this purpose. GRIHA evaluates buildings on approximately 34 criteria covering site planning, construction management, energy efficiency, water efficiency, solid waste management, and indoor environmental quality, calibrated for Indian conditions.

Step 2 — Why other options are wrong:

- (A) The Indian Green Building Council (IGBC) is the CII body that administers *LEED India* and the CII-IGBC family of ratings (Green Homes, Green Factory, etc.); it does not administer GRIHA.
- (C) The Bureau of Energy Efficiency (BEE) administers the *BEE Star Label Programme* for appliances and the *ECBC Star rating* for commercial buildings; it does not develop or administer GRIHA.
- (D) NIUA (National Institute of Urban Affairs) is a research and capacity-building institution focused on urban governance and smart cities; it has no role in developing or administering the GRIHA building rating system.

Final Answer:

Answer: (B) [Go Back to Q9](#)



Q10.

Solution

Concept: Vastu Shastra is the ancient Indian system of architecture and spatial arrangement that prescribes relationships between directions (cardinal and ordinal), deities, elements, and human well-being. The Vastu Purusha Mandala is the cosmographic grid that assigns attributes to each directional zone of a site or building.

Step 1 — East as the preferred primary entrance direction: In Vastu Shastra, **East** (and, by extension, the auspicious sub-direction **North-East** — governed by Ishana, deity of wisdom and prosperity) is considered the most favourable direction for the main entrance. The rationale is:

- (a) The **rising sun** enters from the east, bringing beneficial morning solar energy, natural light, and Vitamin D.
- (b) The east direction is associated with *Surya* (sun god) and represents new beginnings, positive energy, and life-force in Vastu cosmology.
- (c) An east-facing entrance allows the morning sun to illuminate the entrance hall and main living spaces, creating naturally bright, warm, and welcoming interiors.

North is the second most favourable direction (associated with Kubera, deity of wealth); North-East is considered the most auspicious sub-direction for the entrance door.

Step 2 — Why other options are wrong:

- **(B)** West (governed by Varuna, deity of rain) represents the setting sun and is generally avoided as the primary entrance in Vastu Shastra; afternoon western sun creates glare and heat at the entrance.
- **(C)** South (governed by Yama, the lord of death and the realm of the dead) is considered the most inauspicious direction for a main entrance; a south-facing door is strongly discouraged.
- **(D)** North-West (governed by Vayu, wind deity) is associated with movement, instability, and change; while not as inauspicious as south, it is not recommended as the *primary* entrance direction.

Final Answer: A

Answer: (A) [Go Back to Q10](#)



ANSWER KEY

Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans	Q.No	Ans
1	B	2	A	3	D	4	C	5	B
6	A	7	C	8	D	9	B	10	A

All questions are original and based on MHADA Act 1976, NBC 2016, UDCPR 2020, MRTTP Act 1966, PMAY-U, Architects Act 1972, and Green Building/ECBC standards as prescribed for Section V of the MAH M Arch CET.

