

MAH M Arch CET Current Architecture Practice

Sample Paper – 5

Duration: 12 Minutes

Maximum Marks: 20

Instructions

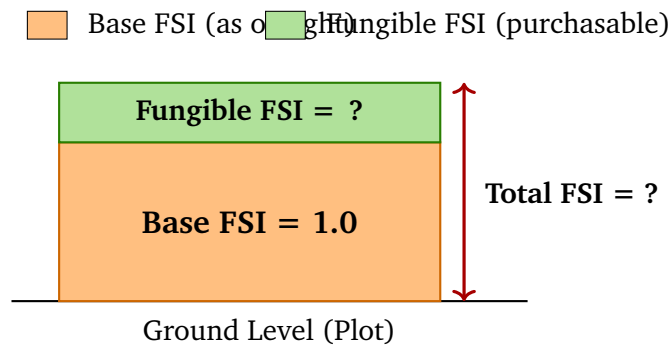
- This paper contains **10 questions**, each carrying **2 marks**.
- Each question has **one correct** answer from four options (A)–(D).
- **No negative marking** for wrong or unattempted answers.
- Syllabus: NBC 2016, UDCPR 2020, MRTTP Act 1966, Architects Act 1972, Green Building Standards.

SECTION V — Current Architecture Practice

- Q1.** As per NBC 2016 Part 4 (Fire and Life Safety), what is the **maximum permissible travel distance** from any point on a floor to a **protected exit** in a **non-sprinklered assembly-use** building?
- (A) 45 m
(B) 30 m
(C) 22.5 m
(D) 60 m
- Q2.** According to NBC 2016 Part 9 (Plumbing Services), what is the minimum depth of **water seal** required in a trap installed as part of a sanitary drainage system?
- (A) 25 mm
(B) 38 mm
(C) 65 mm
(D) 50 mm
- Q3.** Under UDCPR 2020, a plot owner in the **Mumbai Metropolitan Region (MMR)** on a **12 m wide road** is entitled to a **base FSI of 1.0**. The owner wishes to avail the **maximum permissible Fungible (Premium) FSI** by paying the applicable premium charges. The diagram below illustrates



the Fungible FSI stacking concept. What is the **maximum total permissible FSI** for this plot?



- (A) 1.35
- (B) 1.50
- (C) 1.25
- (D) 2.00

Q4. Under **UDCPR 2020**, for a building with a height between **24 m and 30 m** proposed in a **non-MMR Urban Local Body (ULB)**, what is the minimum prescribed **side setback**?

- (A) 3.0 m
- (B) 4.5 m
- (C) 6.0 m
- (D) 9.0 m

Q5. Under the **Maharashtra Regional and Town Planning Act, 1966**, after a draft Development Plan is published under **Section 26**, within what **time period** may any person submit **objections or suggestions** to the Planning Authority?

- (A) 30 days
- (B) 2 months
- (C) 6 months

(D) 1 year

Q6. Under the **MRTP Act, 1966**, which authority is **primarily empowered** to prepare a **Regional Plan**?

- (A) The Regional Board
- (B) The Municipal Corporation of the region
- (C) The District Collector
- (D) The Town Planning Authority of the local area

Q7. Under **Section 15 of the Architects Act, 1972**, which of the following is the **minimum qualification** that makes a person eligible to apply for **registration as an architect** with the Council of Architecture?

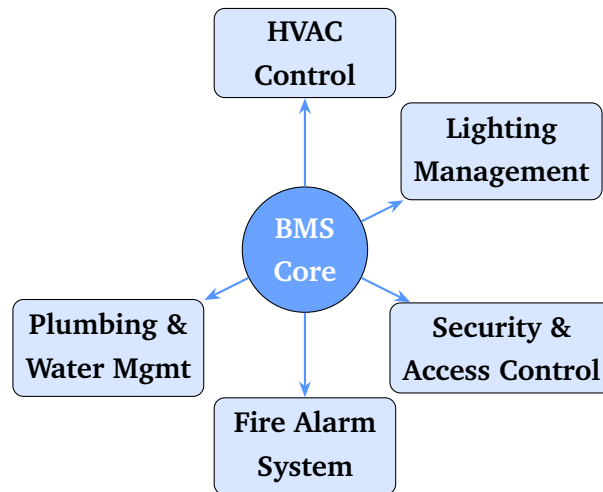
- (A) A diploma in Civil Engineering from a recognized institution
- (B) A degree in Urban Planning from a recognized university
- (C) A degree or diploma in Architecture recognized by the Council of Architecture
- (D) A postgraduate degree in Environmental Design from a recognized institution

Q8. The **EDGE** (*Excellence in Design for Greater Efficiencies*) green building certification standard was **developed by** which international organization?

- (A) United States Green Building Council (USGBC)
- (B) BRE Global (Building Research Establishment), United Kingdom
- (C) Indian Green Building Council (IGBC)
- (D) International Finance Corporation (IFC), World Bank Group

Q9. The figure below shows the core subsystems of a typical **IoT-enabled Building Management System (BMS)** in a smart building. Which of the following is generally **NOT** integrated as a core subsystem within a BMS?





- (A) HVAC (Heating, Ventilation and Air Conditioning) control
- (B) Fire alarm detection and monitoring
- (C) Structural load-bearing capacity analysis
- (D) Automated lighting and access control systems

Q10. The **Green Star** green building rating system was developed by the Green Building Council of which country?

- (A) Australia
- (B) United Kingdom
- (C) Canada
- (D) South Africa



Detailed Solutions

Q1.

Solution

Concept: NBC 2016 Part 4 (Fire and Life Safety) prescribes maximum travel distances from any point on a floor to the nearest protected exit. These limits vary by occupancy group and depend on whether an automatic sprinkler system is installed.

Step 1 — Identify Occupancy and Sprinkler Condition: The building is of *assembly* occupancy and is **non-sprinklered**. NBC 2016 Part 4 distinguishes between sprinklered and non-sprinklered conditions in its tabulated limits.

Step 2 — Apply NBC 2016 Provision: For a **non-sprinklered assembly-use** building, the maximum permissible travel distance to a protected exit is **30 m**. When an automatic sprinkler system is installed throughout, this limit is relaxed to 45 m.

Why other options are wrong:

- (A) **45 m** — This is the limit for *sprinklered* assembly buildings, not non-sprinklered.
- (C) **22.5 m** — Not a standard NBC 2016 travel distance for assembly occupancy; this figure does not appear in the relevant table.
- (D) **60 m** — Far exceeds the prescribed limit; no provision in NBC 2016 Part 4 permits 60 m for assembly occupancy, even with sprinklers.

Final Answer: — 30 m

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

Q2.

Solution

Concept: NBC 2016 Part 9 (Plumbing Services) governs sanitary and drainage installations in buildings. A water-seal trap prevents foul gases from the drainage system from entering the building. The *depth of water seal* is the vertical distance between the crown weir and the dip of the trap outlet.

Step 1 — Reference Standard: NBC 2016 Part 9 aligns with **IS 5329** (Code of Practice for Sanitary Pipe Work Above Ground for Buildings), which specifies trap requirements for drainage systems.

Step 2 — Apply Provision: The minimum depth of water seal in a sanitary trap is **50 mm**. This depth is sufficient to resist normal siphonage under suction and prevents evaporative loss of the seal under typical conditions.



Why other options are wrong:

- (A) 25 mm — Too shallow; a 25 mm seal is easily broken by induced siphonage or evaporation, and is below the minimum standard.
- (B) 38 mm — Associated with older British Standard practice; not the minimum value prescribed under NBC 2016 / IS 5329 in India.
- (C) 65 mm — Exceeds the minimum; deeper seals may be used in special applications but 65 mm is not the prescribed minimum.

Final Answer: D — 50 mm

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

Q3.

Solution

Concept: Under UDCPR 2020, the **Fungible (Premium) FSI** mechanism allows a plot owner in the Mumbai Metropolitan Region (MMR) to purchase additional FSI over and above the permissible base FSI by paying a premium to the government. The maximum Fungible FSI that can be purchased is **35% of the base FSI**.

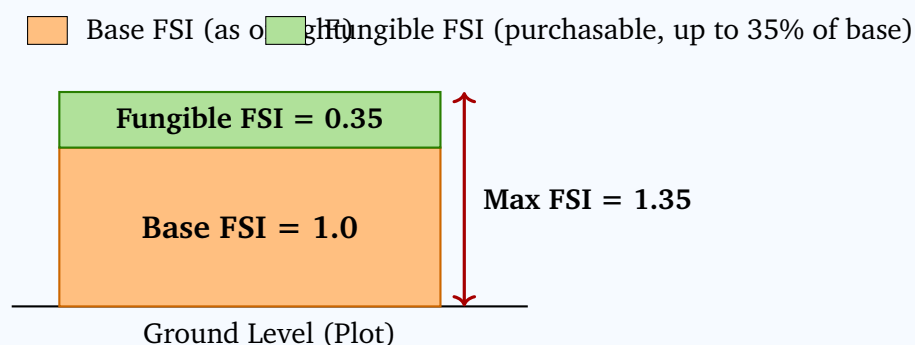
Step 1 — Identify Base and Fungible FSI Values:

- Base FSI (12 m road, MMR) = 1.0
- Maximum Fungible FSI = 35% of Base FSI = $0.35 \times 1.0 = 0.35$

Step 2 — Compute Maximum Total FSI:

$$\text{Maximum Total FSI} = \text{Base FSI} + \text{Fungible FSI} = 1.0 + 0.35 = 1.35$$

The stacking diagram with labelled values is shown below:



Why other options are wrong:

- (B) 1.50 — Would require a Fungible FSI of 50% of base ($0.50 \times 1.0 = 0.50$), which exceeds the 35% ceiling under UDCPR 2020.



- (C) 1.25 — Would imply only 25% Fungible FSI; although below the ceiling, it is not the *maximum* permissible FSI.
- (D) 2.00 — Far exceeds the combined limit; UDCPR 2020 does not permit 2.0 total FSI on a 12 m road plot with base 1.0 in MMR through the Fungible FSI route alone.

Final Answer: — 1.35

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

Q4.

Solution

Concept: UDCPR 2020 prescribes minimum side (and rear) setbacks that increase with building height, ensuring adequate fire access, light, ventilation, and emergency egress around taller structures.

Step 1 — Identify Height Band: The proposed building height falls in the range of 24 m to 30 m.

Step 2 — Apply UDCPR 2020 Setback Table: For buildings in the height range of 24 m to 30 m in a **non-MMR Urban Local Body**, UDCPR 2020 prescribes a minimum **side setback of 6.0 m** on each side.

Why other options are wrong:

- (A) 3.0 m — Applicable to lower-height buildings (typically up to 10–12 m); insufficient for the 24–30 m height band.
- (B) 4.5 m — Applicable to buildings in an intermediate height range (approximately 12–24 m); not correct for 24–30 m.
- (D) 9.0 m — The side setback applicable to buildings *exceeding* 30 m, i.e., the next higher category; not for the 24–30 m band.

Final Answer: — 6.0 m

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

Q5.

Solution

Concept: The MRTP Act, 1966 establishes a statutory procedure for preparing, publishing, and sanctioning Development Plans. Public participation through written objections and suggestions is a constitutionally mandated step after publication of the draft plan.

Step 1 — Publication of Draft DP (Section 26): Once the Planning Authority



has prepared a draft Development Plan, it is published in the Official Gazette and made available for public inspection. A notice is given inviting objections and suggestions from any person.

Step 2 — Objection Period (Section 28): Under the MRTTP Act, 1966, any person may file objections or suggestions within **2 months** from the date on which the notice of publication of the draft DP is given under Section 26. The Planning Authority is then obliged to consider all such objections before finalising the plan.

Why other options are wrong:

- **(A) 30 days** — Too short; the Act allows 2 months to provide adequate opportunity for public participation.
- **(C) 6 months** — This timeframe relates to the Planning Authority's obligation to complete its consideration of objections, not the deadline for the public to file them.
- **(D) 1 year** — No provision in the MRTTP Act sets a 1-year window for objections to a draft Development Plan.

Final Answer: — 2 months

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

Q6.

Solution

Concept: The MRTTP Act, 1966 establishes a three-tier planning hierarchy: Regional Plans, Development Plans, and Town Planning Schemes. Each tier is prepared by a distinct, designated authority.

Step 1 — Statutory Framework (Part II, MRTTP Act): Part II of the MRTTP Act, 1966 deals with Regional Planning. It provides for the constitution of a **Regional Board** for any region and defines its functions.

Step 2 — Authority for Regional Plan (Section 7): Under **Section 7** of the MRTTP Act, 1966, the **Regional Board**, where constituted for a region, is primarily empowered to prepare the Regional Plan for that region. Where no Regional Board has been constituted, this power vests with the **State Government**.

Why other options are wrong:

- **(B) Municipal Corporation** — A Municipal Corporation is a local authority responsible for Development Plans within its municipal limits; Regional Plans are a different, superior level of planning.
- **(C) District Collector** — The Collector exercises powers under revenue and land acquisition legislation; the MRTTP Act does not vest Regional Plan preparation with the Collector.



- (D) **Town Planning Authority** — Town Planning Authorities prepare Development Plans for their specific jurisdictions; they do not prepare Regional Plans.

Final Answer: — The Regional Board

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

Q7.

Solution

Concept: The Architects Act, 1972 regulates the profession of architecture in India by establishing the Council of Architecture (CoA) and providing for registration of architects. Only registered architects may use the title “Architect” professionally.

Step 1 — Section 15 of Architects Act, 1972: Section 15 specifies the qualifications that entitle a person to registration. A person is entitled to have their name entered in the Register of Architects if they hold a **degree, diploma, or certificate in Architecture** from an institution and programme **recognized by the Council of Architecture**, as listed in the Schedule to the Act.

Step 2 — Minimum Qualification: The minimum qualifying credential is a **recognized degree or diploma in Architecture** (typically the 5-year B.Arch. degree or an equivalent diploma recognized by CoA). The qualification must be in Architecture specifically, not in a related but distinct discipline.

Why other options are wrong:

- (A) **Diploma in Civil Engineering** — Civil Engineering is a separate profession governed by other Acts; it does not entitle a person to register as an architect under the Architects Act.
- (B) **Degree in Urban Planning** — Urban Planning is a distinct discipline; holders are not entitled to registration as an architect under Section 15 without an architecture qualification.
- (D) **Postgraduate degree in Environmental Design** — A postgraduate degree in a related field does not by itself fulfil the Section 15 requirement; the underlying recognized architecture qualification is mandatory.

Final Answer: — A degree or diploma in Architecture recognized by the Council of Architecture

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



Q8.

Solution

Concept: EDGE (Excellence in Design for Greater Efficiencies) is an internationally recognized green building certification system designed to make buildings more resource-efficient, with a particular focus on **emerging-market** economies.

Step 1 — Origin and Developer: EDGE was created and is operated by the **International Finance Corporation (IFC)**, the private-sector financing arm of the **World Bank Group**. IFC launched EDGE to lower the cost of verifying and certifying resource-efficient buildings globally.

Step 2 — Key Features: EDGE requires a minimum 20% reduction in energy consumption, water consumption, and embodied energy in materials relative to a local baseline. The software and certification infrastructure are managed by IFC in partnership with licensed certification bodies in each country.

Why other options are wrong:

- **(A) USGBC** — The US Green Building Council developed *LEED* (Leadership in Energy and Environmental Design); it had no role in creating EDGE.
- **(B) BRE Global** — BRE Global (UK) developed *BREEAM* (Building Research Establishment Environmental Assessment Method), not EDGE.
- **(C) IGBC** — The Indian Green Building Council promotes LEED India, IGBC Green Homes, Green Factories, and other India-adapted ratings; it did not develop EDGE.

Final Answer: — International Finance Corporation (IFC), World Bank Group

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

Q9.

Solution

Concept: A Building Management System (BMS) — also called a Building Automation System (BAS) — is a computer-based control system that monitors, controls, and optimises a building's **operational** mechanical and electrical services in real time via IoT sensors and actuators.

Step 1 — Identify Typical BMS Subsystems: As shown in the question diagram, a standard BMS integrates the following core subsystems:

- **HVAC Control** — regulates heating, ventilation, and air conditioning in real time.
- **Lighting Management** — adjusts lighting levels using occupancy sensors and time schedules.
- **Security & Access Control** — manages CCTV, door locks, and biometric



access.

- **Fire Alarm System** — monitors smoke/heat detectors and triggers evacuation protocols.
- **Plumbing & Water Management** — monitors water meters, pump systems, and leak detection.

Step 2 — Identify the Non-BMS Function: Structural load-bearing capacity analysis is a *design-phase* engineering activity carried out by structural engineers using specialist software (e.g., ETABS, STAAD.Pro, SAP2000). It is not a real-time operational function that a BMS can monitor or control, and is therefore **NOT** a core BMS subsystem.

Why other options are wrong:

- **(A) HVAC control** — One of the primary and most common BMS integrations; continuously regulated for comfort and energy efficiency.
- **(B) Fire alarm detection and monitoring** — Fully integrated into BMS for life safety; the BMS can trigger alarms, shut down HVAC zones, and coordinate with suppression systems.
- **(D) Automated lighting and access control** — Standard BMS functions; occupancy-based lighting and smart-card/biometric access control are routinely connected to a BMS.

Final Answer: ☒ **C** — Structural load-bearing capacity analysis

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

Q10.

Solution

Concept: Green Star is a comprehensive, voluntary green building rating system that evaluates the environmental design, construction, and operation of buildings across multiple sustainability categories.

Step 1 — Origin of Green Star: Green Star was developed and launched in 2003 by the **Green Building Council of Australia (GBCA)**. It was influenced by BREEAM (UK) and adapted for Australian climatic conditions, building practices, and regulatory context.

Step 2 — Scope and Rating Scale: Green Star covers buildings, fit-outs, and communities, evaluating them across nine categories including Energy, Water, Materials, Indoor Environment Quality, and Innovation. Ratings range from **4-Star** (Best Practice) to **6-Star** (World Leadership).

Why other options are wrong:

- **(B) United Kingdom** — The UK developed *BREEAM* (Building Research Es-



tablishment Environmental Assessment Method) in 1990; not Green Star.

- **(C) Canada** — Canada uses *LEED Canada* (administered by the Canada Green Building Council, CaGBC) and *BOMA BEST*; Green Star was not developed in Canada.
- **(D) South Africa** — The Green Building Council of South Africa (GBCSA) *licensed and adapted* the Green Star framework from Australia for local use; it did not originate the system.

Final Answer: — Australia

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



Answer Key — Sample Paper 5

1	B	2	D	3	A	4	C	5	B
6	A	7	C	8	D	9	C	10	A

