VG ACADEMY — TGPSC AEE (CIVIL) DAILY TEST

Day 1 | Date: 05 June 2026

Topics: Building Materials (Bricks — IS 1077) | Telangana Geography

Time: 30 Minutes **Total Questions: 25 (Part A: 15 + Part B: 10)** **Total Marks: 50 (2 marks each)** **No Negative Marking**

Instructions: All questions are Multiple Choice (MCQ). Each correct answer carries 2 marks. There is no negative marking. Choose the MOST APPROPRIATE answer. Write question numbers clearly.

PART A — CIVIL ENGINEERING: BUILDING MATERIALS — BRICKS (30 MARKS)

1. According to IS 1077, what is the actual (work) size of a standard modular brick?

(A) 200 × 100 × 100 mm

(B) 190 × 90 × 90 mm

(C) 190 × 100 × 90 mm

(D) 200 × 90 × 90 mm

2. What is the nominal size of a standard modular brick (including mortar joint thickness of 10 mm)?

(A) 200 × 100 × 100 mm

(B) 190 × 90 × 90 mm

(C) 210 × 110 × 110 mm

(D) 190 × 100 × 100 mm

3. Under IS 1077, the class designation of a common burnt clay brick represents its:

(A) Water absorption in percentage

(B) Average compressive strength in N/mm²

(C) Density in kg/m³

(D) Dimensional tolerance in mm

4. The maximum permissible water absorption (by mass) after 24 hours immersion in cold water for bricks of class up to 12.5 is:

(A) 10%

(B) 15%

(C) 20%

(D) 25%

5. For bricks with class designation above 12.5 (higher strength), the maximum permitted water absorption is:

(A) 12.5%

(B) 15%

(C) 20%

(D) 22%

6. According to IS 1077, the efflorescence for bricks of class up to 12.5 shall not be more than:

(A) Nil

(B) Slight

(C) Moderate

(D) Heavy

7. For bricks with strength class above 12.5, efflorescence is restricted to:

(A) Nil

(B) Slight

(C) Moderate

(D) Serious

8. The primary engineering purpose of providing a 'frog' (indentation) on the top face of a brick is:

(A) To reduce the weight of the brick

(B) To act as a key for mortar joint and improve bond

(C) To improve thermal insulation

(D) To ensure uniform burning during manufacture

9. The minimum average compressive strength of common burnt clay bricks as per IS 1077 is:

(A) 2.5 N/mm²

(B) 3.5 N/mm²

(C) 5.0 N/mm²

(D) 7.5 N/mm²

10. The main function of alumina (clay) in brick earth is to:

(A) Prevent shrinkage and cracking during drying

(B) Impart plasticity for moulding

(C) Act as a fluxing agent during burning

(D) Provide red colour to finished bricks

11. Which constituent of brick earth prevents shrinkage, cracking, and warping during drying?

(A) Silica

(B) Alumina

(C) Lime

(D) Iron oxide

12. Excess lime in brick earth during burning causes:

(A) Brick to become extremely hard

(B) Brick to melt and lose shape

(C) Significant increase in water absorption

(D) Deep red coloration

13. The process of burning bricks in an open temporary structure (without a permanent kiln) is called:

(A) Kiln burning

(B) Clamp burning

(C) Flash burning

(D) Tunnel burning

14. Efflorescence in bricks is primarily caused by:

(A) High clay content in raw material

(B) Soluble salts migrating to the surface

(C) Excess water used during manufacture

(D) Insufficient burning temperature

15. A brick with a rounded nose (one rounded end) is called a:

(A) Coping brick

(B) Cownose brick

(C) Bull nose brick

(D) Perforated brick

PART B — GENERAL STUDIES: TELANGANA GEOGRAPHY — PHYSICAL SETTING (20 MARKS)

16. The total geographical area of Telangana state is approximately:

(A) 96,077 sq km

(B) 112,077 sq km

(C) 128,077 sq km

(D) 144,077 sq km

17. Telangana shares its northern and north-western boundary with:

(A) Karnataka and Odisha

(B) Andhra Pradesh and Karnataka

(C) Maharashtra and Chhattisgarh

(D) Odisha and Madhya Pradesh

18. The approximate latitude range of Telangana state is:

(A) 13°N to 17°N

(B) 15°46'N to 19°47'N

(C) 18°N to 22°N

(D) 12°N to 16°N

19. Telangana is located on which major physiographic division of India?

(A) Indo-Gangetic Plain

(B) Deccan Plateau

(C) Eastern Coastal Plain

(D) Western Ghats

20. The current number of districts in Telangana (post-2022 reorganisation) is:

(A) 31

(B) 33

(C) 36

(D) 29

21. The two major river systems flowing through Telangana are:

(A) Godavari and Cauvery

(B) Krishna and Pennar

(C) Godavari and Krishna

(D) Tungabhadra and Musi

22. The Kaleshwaram Lift Irrigation Scheme is built on which river?

(A) Krishna

(B) Godavari

(C) Manjeera

(D) Pranahita

23. The most prevalent soil type covering about 48% of Telangana's area is:

(A) Black cotton soil

(B) Alluvial soil

(C) Red soil

(D) Laterite soil

24. Which of the following states does NOT share a border with Telangana?

(A) Maharashtra

(B) Chhattisgarh

(C) Madhya Pradesh

(D) Karnataka

25. Telangana's Singareni Collieries are located in the:

(A) Krishna basin region

(B) Nallamala hills area

(C) Pranahita-Godavari valley

(D) Central Deccan plateau

ANSWER KEY

Q	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Ans	B	A	B	C	B	C	B	B	B	B	A	B	B	B	C	B	C	B	B	B	C	B	C	C	C

DETAILED SOLUTIONS — DAY 1

VG Academy | TGPSC AEE (Civil) | Building Materials: Bricks + Telangana Geography

PART A — BUILDING MATERIALS: BRICKS (IS 1077)

Q1. Standard modular brick actual size

✔ **Correct Answer: (B) 190 × 90 × 90 mm**

As per IS 1077, the actual (work) dimensions of a standard modular brick are 190 mm (L) × 90 mm (W) × 90 mm (H). This excludes mortar joints.

Key values: Actual size = 190×90×90 mm | Nominal size (with 10mm mortar) = 200×100×100 mm

Exam Tip: TGPSC often asks to distinguish "actual" vs "nominal" sizes. Actual = work size; Nominal = work size + mortar thickness.

Q2. Nominal size of modular brick

✔ **Correct Answer: (A) 200 × 100 × 100 mm**

Nominal size = Actual size + mortar joint (10 mm on each side). So 190+10=200 mm (L), 90+10=100 mm (W), 90+10=100 mm (H). This is the design module used in layout calculations.

Exam Tip: Always use nominal size (200×100×100) when calculating number of bricks required for a wall.

Q3. IS 1077 class designation

✔ **Correct Answer: (B) Average compressive strength in N/mm²**

IS 1077 classifies common burnt clay bricks into classes based on minimum average compressive strength: Class 3.5, 5, 7.5, 10, 12.5, 15, 17.5, 20, 25, 30, 35, 40 (in N/mm²).

Classes: 3.5 | 5 | 7.5 | 10 | 12.5 | 15 | 17.5 | 20 | 25 | 30 | 35 | 40 N/mm²

Exam Tip: 12 class designations total in IS 1077. First class bricks ≥ 10 N/mm².

Q4. Water absorption — Class up to 12.5

✔ **Correct Answer: (C) 20%**

IS 1077 limits water absorption to max 20% by mass for brick classes up to 12.5, after 24 hours of immersion in cold water. Higher absorption indicates porosity and reduces durability.

Class ≤ 12.5 → Water absorption ≤ 20% | Class > 12.5 → Water absorption ≤ 15%

Exam Tip: Water absorption test: weigh dry brick → immerse 24 hrs → weigh → % = (wet−dry)/dry × 100

Q5. Water absorption — Class above 12.5

✔ **Correct Answer: (B) 15%**

For higher-strength bricks (class > 12.5), IS 1077 mandates stricter water absorption ≤ 15%. Higher strength = denser microstructure = less porosity = lower absorption.

Exam Tip: Use this as a memory trick — stronger brick = tighter limit. 20% for weak, 15% for strong.

Q6. Efflorescence — Class up to 12.5

✔ **Correct Answer: (C) Moderate**

Efflorescence is caused by soluble salts rising to the surface. IS 1077 allows up to "Moderate" for lower-class bricks. Moderate = 10–50% surface covered by thin salt deposits, no flaking or powdering.

Efflorescence grades: Nil → Slight (≤10%) → Moderate (10–50%) → Heavy (>50%) → Serious

Exam Tip: Class ≤ 12.5 → Moderate allowed | Class > 12.5 → Only Slight allowed

Q7. Efflorescence — Class above 12.5

✔ **Correct Answer: (B) Slight**

Higher-strength bricks demand better quality with efflorescence limited to "Slight" (salt deposits on ≤10% of surface). This ensures long-term durability in load-bearing structures.

Exam Tip: Efflorescence test — brick immersed in 25 mm water for 7 days. Observe after drying.

Q8. Purpose of frog in brick

✔ **Correct Answer: (B) Acts as a key for mortar joint**

The frog is an indentation (typically 10–20 mm deep, 100×40 mm) on the top face. It acts as a mechanical key for mortar, increasing bond strength between brick courses. Bricks are laid with frog facing upward.

Frog dimensions: 10–20 mm deep, approximately 100 mm × 40 mm

Exam Tip: Frog must always face UP during laying so mortar fills it completely.

Q9. Minimum compressive strength (IS 1077)

✔ **Correct Answer: (B) 3.5 N/mm²**

The lowest class designation in IS 1077 is Class 3.5, meaning the absolute minimum average compressive strength acceptable for common building bricks is 3.5 N/mm² (equivalent to 35 kg/cm²).

Minimum = 3.5 N/mm² (35 kg/cm²) | First class bricks ≥ 10 N/mm² | Good quality ≥ 7.5 N/mm²

Exam Tip: For important structures use bricks with ≥ 7.5 N/mm². Never use below 3.5 N/mm².

Q10. Function of alumina in brick earth

✔ **Correct Answer: (B) Impart plasticity for moulding**

Alumina (Al_2O_3) constitutes 20–30% of brick earth. It makes the earth workable and plastic, allowing it to be moulded into shape. Without alumina, bricks cannot be formed. Excess alumina causes shrinkage cracks.

Ideal: Silica 50–60% | Alumina 20–30% | Lime 1–5% | Iron oxide 5–6% | Magnesia <1%

Exam Tip: Alumina = plasticity (moulding). Silica = dimensional stability (no shrinkage).

Q11. Silica prevents shrinkage

✔ **Correct Answer: (A) Silica**

Silica (SiO_2) forming 50–60% of brick earth prevents shrinkage, cracking, and warping during drying by providing structural rigidity. It combines with alumina at high temperatures to form aluminosilicates (the hard matrix of fired bricks).

Exam Tip: Excess silica makes bricks brittle and difficult to burn uniformly.

Q12. Effect of excess lime

✔ Correct Answer: (B) Brick melts and loses shape during burning

In small amounts, lime (CaO) acts as a fluxing agent helping silica melt slightly for binding. But excess lime causes the entire brick to melt and distort during firing. Lumps of limestone also cause "lime blowing" (cracking) after construction.

Exam Tip: Lime = flux in small amount → useful. Excess lime → melting + post-construction lime blowing.

Q13. Clamp burning

✔ Correct Answer: (B) Clamp burning

Clamp burning is a temporary, open-air method where dried bricks are stacked with fuel layers and burned. It is economical for small quantities but gives non-uniform results. Bull's trench kiln and Hoffmann kiln are permanent structures giving better quality.

Clamp = temporary, uneconomical for large scale | Bull's Trench Kiln = most common in India | Hoffmann Kiln = continuous process

Exam Tip: Clamp → intermittent, temporary, outdoor. Kiln → permanent structure, better control.

Q14. Cause of efflorescence

✔ Correct Answer: (B) Soluble salts migrating to surface

Efflorescence occurs when water enters the masonry, dissolves soluble salts (sulphates, chlorides), and carries them to the surface where water evaporates, leaving white salt deposits. Sources: bricks, mortar, groundwater, or atmospheric exposure.

Exam Tip: Prevention: Use bricks with low soluble salt content, waterproof mortar joints, proper DPC.

Q15. Bull nose brick

✔ Correct Answer: (C) Bull nose brick

A bull nose brick has one or both ends rounded (convex), used at external corners and garden edging to give a smooth rounded finish. Cownose brick has both ends rounded. Coping bricks are used at the top of walls.

Bull nose = one end rounded | Cownose = both ends rounded | Coping = top of wall | Perforated = vertical holes

Exam Tip: Special bricks: Bull nose (corners), Coping (wall top), Perforated (lightweight partitions), Hollow (thermal insulation).

PART B — TELANGANA GEOGRAPHY: PHYSICAL SETTING

Q16. Total area of Telangana

✔ Correct Answer: (B) 112,077 sq km

Telangana covers 112,077 sq km, making it the 12th largest state in India by area. It accounts for about 3.5% of India's total geographic area. The state was carved out of Andhra Pradesh on 2 June 2014.

Area = 1,12,077 sq km | 12th largest state | Population ~3.5 crore (2011 census)

Exam Tip: Remember — 1,12,077 (one lakh twelve thousand seventy-seven square km).

Q17. Northern boundary states

✔ Correct Answer: (C) Maharashtra and Chhattisgarh

Telangana borders: North/Northwest → Maharashtra | Northeast → Chhattisgarh | West → Karnataka | South/East → Andhra Pradesh. It is a landlocked state with 5 bordering states.

N/NW = Maharashtra | NE = Chhattisgarh | W = Karnataka | S/SE = Andhra Pradesh

Exam Tip: Telangana does NOT border Odisha, Tamil Nadu, Madhya Pradesh or Goa.

Q18. Latitude range of Telangana

✔ Correct Answer: (B) 15°46'N to 19°47'N

Telangana lies between 15°46'N to 19°47'N latitude and 77°16'E to 81°43'E longitude. This places it in the tropical zone, explaining its semi-arid to tropical climate.

Latitude: 15°46'N to 19°47'N | Longitude: 77°16'E to 81°43'E

Exam Tip: Tropic of Cancer (23.5°N) is well above Telangana — so it is in the tropical belt but NOT crossed by Tropic of Cancer.

Q19. Physiographic region

✔ Correct Answer: (B) Deccan Plateau

Telangana occupies the north-central and eastern portion of the Deccan Plateau. The terrain is generally undulating with an average elevation of 500–600 m above sea level. The Eastern Ghats run along the eastern boundary.

Avg elevation: 500–600 m | Rock type: Archaean crystalline rocks (granite, gneiss) dominant

Exam Tip: The entire Telangana state lies on the Deccan Plateau — no coastal region, no delta.

Q20. Number of districts

✔ Correct Answer: (B) 33

Telangana was initially formed with 10 districts. After reorganization in 2016, it had 31 districts, and after the 2019 additions (Narayanpet and Mulugu), the total is 33 districts. Note: 2022 reorganization expanded this further — verify with latest notification.

2014: 10 districts → 2016: 31 districts → 2019: 33 districts

Exam Tip: TGPSC notifications mention 33 districts — use this figure in exams.

Q21. Major river systems

✔ Correct Answer: (C) Godavari and Krishna

Two major river basins drain Telangana: Godavari (north, ~79% of state basin area) and Krishna (south, ~21%). Major tributaries — Godavari side: Pranhita, Indravathi, Maner, Manjeera. Krishna side: Tungabhadra, Bhima, Musi.

Godavari = 79% of Telangana basin area | Krishna = 21% | Hyderabad sits on Musi (Krishna tributary)

Exam Tip: Kaleshwaram project = Godavari | Srisailam project = Krishna river

Q22. Kaleshwaram Lift Irrigation

✔ Correct Answer: (B) Godavari

The Kaleshwaram Lift Irrigation Scheme (KLIS) is built on the Godavari River at Medigadda in Jayashankar Bhupalpally district. It is one of the world's largest multi-stage lift irrigation projects, designed to irrigate 18.25 lakh acres.

River = Godavari | Pump houses = 3 stages | Design capacity = 2 TMC/day | Target irrigation = 18.25 lakh acres

Exam Tip: The first barrage of KLIS is Medigadda (Lakshmi) barrage — a favorite TGPSC question.

Q23. Dominant soil type

✔ Correct Answer: (C) Red soil

Red soils (Chalka/Nalla Regur) cover approximately 48% of Telangana's area, mainly in the central and eastern parts. Black cotton soils (regur) occupy about 24%, found in the western and northern parts (Nizamabad, Karimnagar, Nalgonda). Red soils are best for millets, groundnut, tobacco.

Red soil ≈ 48% | Black cotton ≈ 24% | Mixed / laterite = rest

Exam Tip: Telangana soil order: Red soil (most) > Black cotton soil > Mixed red & black > Alluvial

Q24. State NOT bordering Telangana

✔ Correct Answer: (C) Madhya Pradesh

Telangana borders Maharashtra (NW), Chhattisgarh (NE), Karnataka (W), and Andhra Pradesh (S/SE). Madhya Pradesh does NOT share a boundary with Telangana — it is separated by Chhattisgarh and Maharashtra.

Exam Tip: 5 bordering states — MH, CG, KA, AP (and nothing else). Madhya Pradesh, Tamil Nadu, Goa do NOT border Telangana.

Q25. Singareni Collieries location

✔ Correct Answer: (C) Pranahita-Godavari valley

Singareni Collieries Company Limited (SCCL), the only coal producing company in South India, operates in the Pranahita-Godavari valley (Gondwana coal belt). It is located in Bhadradri Kothagudem and Mancherial districts. The coal here is of Gondwana formation.

Location: Bhadradri Kothagudem, Mancherial, Peddapalli | Formation: Gondwana coal | Only coal producer in South India

Exam Tip: SCCL = Telangana state + Government of India joint venture. A TGPSC favourite question!