Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE Arch. – SEMESTER – III • EXAMINATION – WINTER 2013

Subject Code: 1035005 **Date: 09-12-2013**

Subject Name: Environmental Science

Time: 10:30 am - 12:30 pm **Total Marks: 50**

Instructions:

1. **Attempt all questions.**
2. **Make suitable sketches wherever necessary.**
3. **Figures to the right indicate full marks.**

Q1 (a) Define the following terms (Any 5): (10)

1) Daylight factor 2) Azimuth & Altitude angle 3) Stack effect in building 4) Cone of vision /Visual field 5) Cavity Resistance 6) Time lag 7) Dehumidification 8) Effective temperature

(b) Answer in one or two sentences with neat & supportive sketches (Any 5): (10)

1) Solarium in cold dry climate

2) Cross ventilation

3) Thermal comfort

4) Convective cooling

5) Macroclimate & Microclimate

6) Day & Night rooms in composite climate

7) PSALI & PAL lighting

Q2 (a) Draw neat and detailed sketches for the following: (06)

1) Wind Tower

2) Absorption, transmission & reflection in glass as a building material

3) Show air flow pattern in a building with inlet of medium size & height & smaller size outlet at higher level.

(b) Show daylight entering in building by ERC-Externally reflected component, IRC-Internally reflected component & SC- Sky component through appropriate diagram. (04)

OR

(b) Show; 1) vortex or turbulence 2) laminar airflow 3) windward & leeward side (04)

4) higher & lower pressure zone (+ve & -ve pressure zones) with a key diagram showing air flow pattern around a building in plan & elevation.

Q3 Answer in brief with appropriate sketches: (05)

(a) Why study of climate is important in Architecture? Explain.

(b) What is Mahoney Table? State its importance & application.

OR

(a) Describe characteristics of shelters in hot dry climate.

(b) Why buildings in Warm Humid climate are required to be elevated from ground? Explain with appropriate diagrams.

Q4 Answer in brief with appropriate sketches: (05)

(a) Discuss 'Heat Exchange Process' in building with neat sketch.

(b) How study of Vernacular/Traditional Architecture becomes essential while designing climate friendly buildings?

OR

(a) Which are the Photometric Quantities of light? Explain each of them.

(b) What is Courtyard Planning? State its application & advantages.

Q5 Answer in detail with supportive sketches: (10)

(a) Explain 'Global Wind Circulation' pattern showing pressure zones, types of global winds & direction of wind flow on earth.

(b) What is Evaporative Cooling? State its application & advantages.

OR

(a) State & explain different elements/features of climate.

(b) What is the importance of Sun Path Diagram in Architecture? Explain.

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