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BAR-029

00311

BACHELOR OF ARCHITECTURE (BARCH)

Term-End Examination

December, 2013

BAR-029 : ARCHITECTURAL SCIENCES AND SERVICES - I (CLIMATOLOGY)

Time : 3 hours *Maximum Marks : 70*

Note : *Question 1 is **compulsory**. Answer 5 questions in **all**. Use of scientific calculator is **permitted**.*

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1. Answer **any 7** from below. **7x2=14**

(a) Vapour Pressure

(b) Isopleths.

(c) Acclimatisation.

(d) Mean radiant temperature.

(e) Comfort zone.

(f) Coefficient of absorbance.

(g) Munsell colour system

(h) Incandescent lamps.

2. (a) Explain : **14**

(i) Solar air temperature

(ii) solar gain factor

(b) What is the fundamental principle for heat gain calculation in the case of a building ?

3. (a) If a bedroom of 3m × 3m × 3m requires 3 air changes per hour and difference in temperature between inside and outside (ΔT) = 12°C, find 9
   (i) ventilation heat flow rate.
   (ii) for a given air velocity of 2m/s, design the necessary cross sectional area of the supply duct.

   (b) A building has a roof top area of 300sqm. If the average rainfall in the region is 700mm and the run off coefficient of the roof top is 0.8, find out the max amount of rainfall that can be harvested from the roof top (in litres). 5

4. (a) What are the effects of cavities in buildings ? What steps are to be taken while providing building cavities so as to achieve good insulation ? 7

   (b) Explain with sketches the functions of an air handling plant used for air conditioning. 7

5. Explain the various external shading devices used in a building. How are they designed ? 14

6. (a) Explain with example, the use of Mahoney tables to record essential climate data. 7

   (b) Explain how you would design outdoor spaces in warm humid climate ? 7

7. Explain daylight factor concept. What are the considerations of use of daylight in design of buildings in 14
   (a) hot dry climate and
   (b) warm humid climate.