

ARC2105  
CLIMATOLOGY -I

MODEL QUESTION PAPER  
(W.E.F 2022-2023 Admitted Batch)

Time: 3 Hrs.

Max. Marks: 70M

Answer any FIVE Questions

All question carry Equal Marks

- |   |  |          |
|---|--|----------|
| 1 | Distinguish between the following  | 14 Marks |
|   | a. Macro climate and micro climate.  | 7 Marks  |
|   | b. Conductive heat transfer and convective heat transfer.  | 7 Marks  |
| 2 | Write short notes on the following.  | 14 Marks |
|   | a. Induced ventilation   | 4 Marks  |
|   | b. Mahoney Tables  | 4 Marks  |
|   | c. Day lighting  | 3 Marks  |
|   | d. Comfort charts  | 3 Marks  |
| 3 | What is the main cause of the global wind pattern on earth?<br>Name the important instruments used to record data on the weather.                      | 14 Marks |
| 4 | Briefly describe the shelter design characteristics in hot-dry climate with the help of neat sketches.   | 14 Marks |
| 5 | Explain the role of thermal comfort factors in determining the comfort zone. Explain body heat balance indicating the heat loss and heat gain factors. | 14 Marks |
| 6 | Describe the various processes by which heat balance of the human body is maintained.  | 14 Marks |
| 7 | Explain the reasons for the variation in the design of building envelop, if the building is located at New Delhi and Trivandrum.                       | 14 Marks |
| 8 | Evaluate the effect of the use of modern construction materials on human comfort.  | 14 Marks |

ARC2106  
STRUCTURAL MECHANICS-III  
**MODEL QUESTION PAPER**  
(W.E.F 2022-2023 Admitted Batch)

Time: 3 Hrs.

Max. Marks: 70M

Answer any FIVE Questions

All questions carry Equal marks

1. Find the Euler's collapse load for a column with bottom fixed and top hinged. Also specify the equivalent length of the column.
2. A 2.0m long pin ended column of square cross section is to be made of wood. Assuming  $E=12$  GPa and allowable stress being limited to 12 MPa. Determine the size of the column to support 200 kN safely. Use factor of safety of 3.0 and Eulers crippling load for buckling.
3. A short column of rectangular section 400mm X 200mm is constructed of a material with a maximum permissible compressive stress of 90 MPa and tensile stress of 25 MPa. If the compressive load is 1500 kN, at what eccentricity can it be applied along the two principal axes.
4. Draw the influence line diagram for reactions at both the supports for a simply supported beam of span 6.0m. Also draw the influence line diagram for Shear force and Bending moment at section 2.0 m from the left end if 3.0 kN/m of length greater than the span is moving over the beam.
5. Figure 1 shows a section of gravity retaining wall. In the top 3.0 m soil is dry and below this level soil is water logged. Calculate the maximum pressure on the base of the wall. Density of dry soil is 16 kN/m<sup>3</sup> and density of submerged soil is 11 kN/m<sup>3</sup> and angle of repose is 30°. Density of masonry is 24 kN/m<sup>3</sup>.

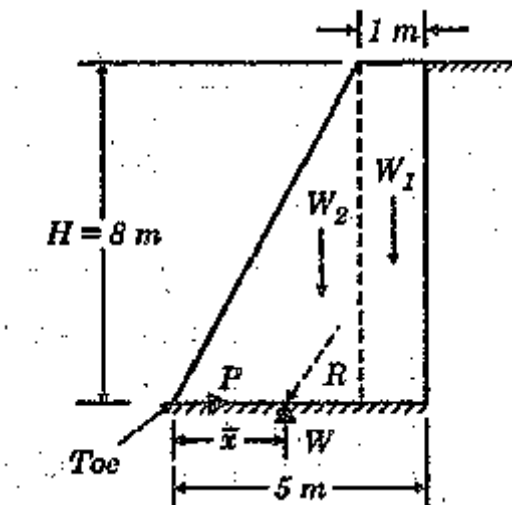


Figure 1

6. (a) Explain in detail plastic bending of beams. [7]
- (b) Find the shape factor and plastic moment of capacity of a T-section 100mm X 12mm flange and 180mm X 10mm web. Assume  $f_y = 250$  MPa. [7]
7. (a) Upper and Lower bound theorems. [6]
- (b) Determine the collapse load for a portal frame of uniform cross section as shown in Figure 2. [8]

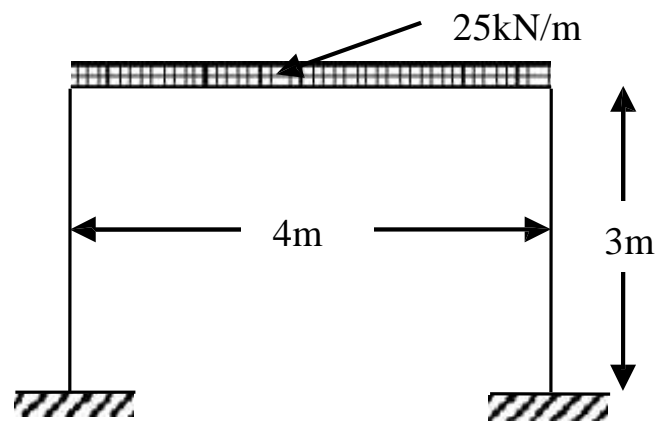


Figure 2

8. Write short notes on:
- (a) Rankine's Equation [3]
- (b) Load factor [3]
- (c) Plastic Hinge [4]
- (d) Coloumb's theory [4]

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ARC2101  
ARCHITECTURAL DESIGN -II

MODEL QUESTION PAPER  
(W.E.F 2022-2023 Admitted Batch)

Time: 10 Hrs.

Max. Marks: 50M

(NURSERY SCHOOL)

Nursery school has become a stepping stone in today's context of educational needs of the society. In this context of educational needs, a renowned Private educational Organisation is intending to construct a nursery school in a housing colony.

It was decided to design the nursery school in a site admeasuring 40X50 ms with shorter side abutting a 12m wide road and is facing towards east side.

Following are the Requirements:

1. Classrooms -- 2nos – 30 sq.m
2. Indoor Play area—1no.—80sq.m
3. Toilets -- Girls and boys—3no.s each
4. Wash basins – 6 nos
5. Staff Room with a Toilet – 30sqm
6. Office room with toilet – 30sqm
7. Principal room with toilet\_30sqm
8. Store Room – 15sqm
9. Restroom – 15 sqm

Drawings to be submitted

- |                                     |          |
|-------------------------------------|----------|
| a) Site plan                        | -- 1:100 |
| b) Floor Plans                      | -- 1:50  |
| c) Front Elevation and a section    | -- 1:20  |
| d) Furniture layout of a class room | -- 1:20  |
| e) Perspective                      |          |

ARC2102  
HISTORY OF ARCHITECTURE-II

MODEL QUESTION PAPER  
(W.E.F 2022-2023 Admitted Batch)

Time: 3 Hrs.

Max. Marks: 70M

Answer any FIVE Questions

All questions carry Equal Marks

1. Write the following with neat sketches

- a) Explain the City Planning and organization of any two towns of Harappa civilization. 7 MARKS
- b) What are the Vastu shastra recommendations for planning a city during Vedic period. 7 MARKS

2. Explain the following with neat sketches

- a) What is Mahayana and Hinayana? 4 MARKS
- b) What are Caves, and Viharas in Buddhist Architecture? 4 MARKS
- c) Explain the parts of Stupa. 3 MARKS
- d) Write notes on elements of Jain Architecture. 3 MARKS

3. Write short notes on the following:

- a) Ladh Khan Temple. 7 MARKS
- b) Temple at Deogarh. 7 MARKS

4. Explain the various parts of an Orissa temple. Explain in detail any two Orissa temples.

14MARKS

5. Explain in detail any two styles of South Indian temple Architecture.

14 MARKS

6. Explain in detail important features of Indo-Islamic Architecture.

14 MARKS

7. Write short notes on the following:

- a) Tughlaq Dynasty. 7 MARKS
- b) Provincial Styles of Gujarat. 7 MARKS

8. Write short notes on the following:

- a) What are the characteristic features of Mughal architecture? 7 MARKS
- b) Write short notes on famous buildings of Mughal style. 7 MARKS

ARC2103  
BUILDING MATERIALS & CONSTRUCTION -III

MODEL QUESTION PAPER  
(W.E.F 2022-2023 Admitted Batch)

Answer any ONE question from Part-1  
Answer any THREE questions from Part-2

Time: 3Hrs. Max.

Marks: 50M

Part – 1

1. Design and draw Plan & Section of an open well staircase for an office building, the building height is 10.8M high and floor to floor height of the building is 3.6M. The size of the stair hall is limited to 5.0M X 5.0M. state the reasons for the width, riser and tread adopted for the stair. Adopt Suitable scale. 20 Marks
  
2. A column of 230MM X 345MM has to provide with an RCC Footing 1500MM X 1800MM and 1800MM deep. Assuming necessary reinforcement diameters for mat, and column, spacing and grade mix. Draw suitable scale. 20 Marks
  - a) Plan
  - b) Section

Part-2

3. Write a short note on the following
  - a) Concrete grades and setting process 5 Marks
  - b) Suitable foundation types for very low SBC values 5 Marks
  
4. State the difference between one-way slab and two-way slab. Show a sketch of plan and sections of one-way slab and two-way slab, mention standard sizes, spacing and grade mix details. 10 Marks
  
5. What is scaffolding? Mention its various components. Name the different types of scaffolding and describe them with neat sketches. 10 Marks
  
6. State the principal causes of unequal settlement of structures and mention the precautions to be taken to prevent uneven settlement. 10 Marks
  
7. Write a short note on the following
  - a) Requirements of good staircase 5 Marks
  - b) Terminology used in staircase – Sketches 5 Marks

ARC2104  
BUILDING SERVICES-I  
(WATER SUPPLY & SANITARY ENGINEERING)

**MODEL QUESTION PAPER**  
(W.E.F 2022-2023 Admitted Batch)

Time: 3 Hrs.

Max. Marks: 70M

Answer any FIVE Questions

All questions carry Equal Marks

1. Briefly explain the importance of water for all life in general and types of sources of water supply.
2. Briefly explain the following
  - a) Impurities in water 3 Marks
  - b) Qualities in Potable water 3 Marks
  - c) Coagulation of water 4 Marks
  - d) Bacteriological test of Water 4 Marks
3. Briefly explain the different types of water distribution network in supply of water from storage reservoirs with neat sketches.
4. Write a short note on the following
  - a) Guidelines for laying of water mains under roads 7 Marks
  - b) Water supply to high rise buildings: problems encountered & systems adopted. 7 Marks
5. Briefly explain about conservancy method and water -carriage system along with their advantages and disadvantages.
6. Briefly explain about the principles of house drainage system. State the differences between one pipe and two pipe system of building sanitation.
7. Write a short note on the following
  - a) Inspection chamber and gully trap 4 Marks
  - b) Requirements of good trap 3 Marks
  - c) Rainwater harvesting systems 3 Marks
  - d) Ventilation of sanitary systems 4 Marks
8. Explain the following with good examples
  - a) Design calculations of septic tank 7 Marks
  - b) Water demand calculation for overhead water tanks 7 Marks