**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**
**(END SEMESTER EXAMINATION)**

**CLASS: B.ARCH** **SEMESTER : VII**
**BRANCH: ARCHITECTURE** **SESSION : MO/2025**

**SUBJECT: AR401 HOUSING & SETTLEMENT SYSTEMS**

**TIME: 3 Hours** **FULL MARKS: 50**

**INSTRUCTIONS:**
**1. The question paper contains 5 questions each of 10 marks and total 50 marks.**
**2. Attempt all questions.**
**3. The missing data, if any, may be assumed suitably.**
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
**5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.**

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|---|---|---|---|---|
| Q.1(a) | Define "Cooperative Societies" and list the essential requirements for forming a cooperative society. Discuss the different types of housing cooperatives. | [5] | 3 | 2 |
| Q.1(b) | If the population of a town in December 2024 is 2,54,972, the data for the last six years for birth rate, death rate, immigration rate, and emigration rate are as shown in the table below. Calculate the population at the beginning of 2019. | [5] | 4,5 | 3 |

| Year | Birth rate | Death rate | Immigration rate | Emigration rate |
|---|---|---|---|---|
| 2019 | 2.4 | 0.8 | 1.8 | 0.9 |
| 2020 | 1.35 | 2.5 | 3 | 1.5 |
| 2021 | 1.75 | 2 | 3.5 | 1.2 |
| 2022 | 2.25 | 0.75 | 1.75 | 0.85 |
| 2023 | 1.25 | 0.5 | 2.25 | 1.5 |
| 2024 | 1.2 | 0.6 | 2 | 0.95 |

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| Q.2(a) | What do you understand by the "hierarchy of urban development"? List the different levels of planning used within this hierarchy and the typical population size associated with each. | [5] | 3,4 | 2 |
| Q.2(b) | For a city A with a varying population growth rate, calculate the expected population in the years 2041 and 2061 for the following decadal data | [5] | 5 | 3 |

| Year | Population |
|---|---|
| 1961 | 89,006 |
| 1971 | 1,54,975 |
| 1981 | 1,99,876 |
| 1991 | 2,76,435 |
| 2001 | 3,54,789 |
| 2011 | 5,43,988 |
| 2021 | 6,56,723 |

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|---|---|---|---|---|
| Q.3(a) | Define "neighborhood". Discuss the neighborhood model developed by C. Perry. Support with sketch. | [5] | 1,3 | 1,2 |
| Q.3(b) | 3 cities in a state with the following data for 2024 | [5] | 4,5 | 3 |

| City | Population in January | Population in December | Emigrant | Immigrant |
|---|---|---|---|---|
| A | 8,94,560 | 9,14,458 | 54,879 | 78,980 |
| B | 10,56,782 | 11,10,512 | 78,967 | 63,438 |
| C | 12,67,765 | 13,78,980 | 65,432 | 87,655 |

Find:
i) Net migration and NMR for each city.
ii) The state's overall NMR.
iii) Which city is losing the most people relative to its population size?

**PTO**

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|---|---|---|---|---|
| Q.4(a) | Enumerate the term “Slum”. What factors contribute to the formation of slums, and how does migration influence their development? | [5] | 1,3 | 1,2 |
| Q.4(b) | (a) A neighborhood of size 2 Km X 2.5 Km has a residential population of 68,000. The residential, commercial, and green areas cover 32%, 6%, and 15%, respectively. (i)Calculate the net and gross residential density for the neighborhood in Acres.<br>(ii) Assume that only 90% of the residential area is actually developed for housing (the rest being internal roads and community spaces). Recalculate the effective net residential density based on developed land only.<br>(b) For a plot of size 15m X 20m, the permissible ground coverage is 45%, and FAR 1.8. If the owner utilizes only 42% of G.C., calculate the number of floors that can be constructed on the site, if the staircase covers 7 sqm. | [5] | 5 | 3 |
| Q.5(a) | Discuss transit-oriented development and enumerate how it can help in controlling urban sprawl. | [5] | 3,4 | 3 |
| Q.5(b) | What roles do government housing policies such as Pradhan Mantri Awas Yojana (PMAY) and Rajiv Awas Yojana (RAY) play in improving housing conditions in India? | [5] | 2 | 2 |

**::::::19/11/2025::::::M**