MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

MANIPAL INSTITUTE OF TECHNOLOGY

FOURTH SEMESTER B.TECH (CIVIL ENGINEERING)

END SEMESTER EXAMINATION, MAY 2023

BUILDING MATERIAL TECHNOLOGY (CIE 2252)

(05 – 06 - 2023)

TIME: 3 HRS. **MAX. MARKS: 50**

Note: 1. Answer all questions.
2. Any missing data may be suitably assumed.
3. Use of IS 456 and IS 10262 codes is permitted.

Q. NO	QUESTION	MARKS	CO	BL
1A	Explain the rules to be followed to get good bond between bricks.	**5**	**5**	**2**
1B	Identify the slump ranges for the following: (a) roof slab (b) vibrated cement concrete (c) road work.	**3**	**3**	**3**
1C	Outline the effect of silt and clay present in aggregate on concrete mix.	**2**	**1**	**2**
2A	Illustrate the primary goal of concrete mixing and explain different method of concrete mixing.	**5**	**3**	**2**
2B	Summarize the characteristics of first-class bricks.	**3**	**5**	**2**
2C	Explain the significance of transition zone.	**2**	**5**	**2**
3A	Design a M25 concrete for the following data: cement with 43 grade having specific gravity 2.68, Zone-II, Slump of 125 mm, for moderate exposure condition, course aggregate size of 20mm having specific gravity 2.75 and natural sand as fine aggregate having specific gravity 2.62. consider target mean strength as 32.4 N/mm^2.	**5**	**4**	**6**
3B	Below are the observations of Los Angeles Abrasion test on aggregate. Assess the Los Angeles Abrasion value and interpret the result. Also write quality control report as per IRC specifications below: Weight of dried aggregate sample (W1) = 4000g Weight of aggregate retained on 1.75mm sieve (W2) = 2420g	**3**	**4**	**5**

	<table><tr><th>Sl.No.</th><th>Type of pavement layer</th><th>Max. permissible abrasion value in %</th></tr><tr><td>1</td><td>Water bound macadam with sub base course</td><td>60</td></tr><tr><td>2</td><td>WBM base course with bituminous surfacing</td><td>50</td></tr><tr><td>3</td><td>Bituminous bound macadam</td><td>50</td></tr><tr><td>4</td><td>WBM surface course</td><td>40</td></tr><tr><td>5</td><td>Bituminous penetration macadam</td><td>40</td></tr><tr><td>6</td><td>Bituminous surface dressing cement concrete surfaces</td><td>35</td></tr><tr><td>7</td><td>courses Bituminous concrete surfaces courses</td><td>30</td></tr></table>			
3C	Summarize the difference between English bond and Flemish bond.	**2**	**5**	**2**
4A	Explain all the Bogue's compound in detail.	**5**	**4**	**2**
4B	Identify the difference between flyash bricks and clay bricks.	**3**	**5**	**3**
4C	Identify the significance of adding the following mineral admixtures into self-compacting concrete. a) Silica fumes b) Stone powder	**2**	**5**	**3**
5A	Explain the essential components of floor with a neat diagram and summarize the factors effecting the choice of flooring materials.	**5**	**5**	**2**
5B	Explain fineness modulus of the aggregate and how is it computed.	**3**	**1**	**2**
5C	List the benefits of reactive powder concrete.	**2**	**5**	**4**