R18 Regulation *Subject code:* 2E5AA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.TechV Semester Supplementary Examinations, July 2022

Concrete Technology

(Civil engineering)

Maximum Marks: 70 Date:06.07.2022 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

1 What are the causes for unsoundness of cement?
2 What are "Bogues compounds"?
3 Explain about Bulking of Sand.
4 What are the different shapes of aggregate.
5 List the factors affecting workability.
6 For which type of mix do you use Vee-Bee test? What are the units of measurements?
7 State necessity of curing for cement concrete.
8 Define Initial setting time and Final setting time of concrete.
9 Give the application of cellular concrete.
10 Differentiate between RCC and Light weight concrete.

Part-B

Answer All the following questions. (10M X 5=50Marks)

11 a) List out different grades of cement. Explain in detail . 5M
b) Explain in detail about heat of hydration of cement. 5M

OR

12 Explain the different types of chemical and mineral admixtures in the preparation of special concrete? 10M

13 a) Explain Alkali aggregate reaction and how it can be controlled? 5M
b) Describe the mechanical properties of aggregates that are important for construction. 5M

OR

14 Explain the following tests 10M
i) Specific gravity & Water absorption of aggregate ii) Bulk density

15 Explain the process of manufacture of concrete in detail. 10M

OR

16 What are the various tests to measure workability? Explain any two with neat sketch? 10M

17 Explain in detail about different methods of non-destructive testing of concrete. 10M

OR

18 a) Calculate the Gel/space ratio and hence estimate the 28 days strength for 45kg of cement at 0.56 water/cement ratio on 90% hydration. 5M

b) Calculate the maturity value and estimate the 14 days strength for M25 grade concrete if it is cured at 15^0C from 0 to 12 hr and 12^0C for the rest of the period during a day. The Plowman's constants are A=21 and B=61. 5M

19 Design M25 grade concrete using IS method for the following data given below 10M

a) Cement OPC 53 grade specific gravity 3.12
b) Fine aggregate, River sand, Zone III and specific gravity-2.45
c) Coarse aggregate 20mm crushed granite specific gravity-2.65
d) free moisture in sand is 5% with10% bulking
e) Exposure-moderate
f) RCC work with good quality control
g) Workability-100mm slump (Pumpable concrete)
Assume any other data suitably

OR

20 a) Explain in detail about self compacting concrete & fiber reinforced concrete. 6M
b) Differentiate between polymer concrete and polymer impregnated concrete. 4M