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**Presidency University**

**Bengaluru**

**SCHOOL OF ENGINEERING**

**MAKEUP EXAMINATIONS - JULY 2024**

**Even Semester**: I

**Course Code**: CIV1008

**Course Name**: Basic Engineering Sciences

**Program** : B. Tech

**Date**: 05 July 2024

**Time**: 9.30 AM to 12.30 PM

**Max Marks**: 100

**Weightage**: 50%

**Instructions:**

*Read the all questions carefully and answer accordingly.*

*Scientific and non-programmable calculator is permitted*

**Part A [Memory Recall Questions]**

**Answer any FIVE Questions. Each question carries 02 marks. (5Qx 2M= 10M)**

1. Define Civil Engineering. Name any two branches of civil engineering. (C.O.No.1) [Knowledge]
2. Write the Role of Civil Engineers. (C.O.No.1) [knowledge]
3. What is meant by mechanization in construction industry. (C.O.No.2) [Knowledge]
4. What do you understand by the term “Construction automation’. (C.O.No.2) [Knowledge]
5. What is a joining process? (C.O.No.3) [knowledge]
6. What is Additive Manufacturing? (C.O.No.3) [knowledge]
7. What is a hard solder? (C.O.No.4) [knowledge]
8. Identify any two Positive displacement pumps. (C.O.No.4) [knowledge]

**Part B [Thought Provoking Questions]**

**Answer any FIVE Questions. Each question carries 10 marks. (5Qx10M=50M)**

1. Discuss the various advantages and disadvantages of Mechanization in Construction.

(C.O.No.2) [Comprehension]

1. Tasks that can be most automated are cheap for human labor to perform. This makes robot economics challenging. Discuss the various applications of robots in construction.

(C.O.No.2) [Comprehension]

1. Write the benefits and challenges of 3D concrete printing. (C.O.No.2) [Comprehension]
2. Additive Manufacturing is a manufacturing process to add material layer by layer and milling is a metal removal process. Considering the above statements differentiate between additive and subtractive manufacturing process. (C.O.No.3) [Comprehension]
3. Identify any 4 Plastic Deformation process and explain them with suitable diagrams.

(C.O.No.3) [Comprehension]

1. Pumps are a prime mover, it is defined as a mechanical device that rotates or reciprocates to move fluid from one place to another. Identify any Non-Positive Displacement pumps and explain the same with suitable diagram. (C.O.No.4) [Comprehension]
2. Varun is riding a car powered by a diesel engine, Identify the prime mover Tarun is using and classify the same. (C.O.No.4) [Comprehension]

**Part C [Problem Solving Questions]**

**Answer any TWO Questions. Each question carries 20 marks. (2Qx20M=40M)**

1. a). Explain the factors affecting the selection of construction equipment. [10]

b). Explain the various advantages and disadvantages of precast elements.[10]

(C.O.No.2) [Application]

1. In an Experiment of Machining operation the tool life was found to vary with the cutting speed as per the data.

|  |  |
| --- | --- |
| CUTTING SPEED (m/min) | TOOL LIFE (min) |
| 120 | 81 |
| 180 | 36 |

a) Identify the tool life equation used to calculate the tool exponent and constant C as per tool life equation.

b) Calculate exponent (n) and constant (C)

c) What will be the increase in tool life if the cutting speed is reduced to 50% of the original?

(C.O.No.3) [Application]

1. A cart travels over a frictionless roller coaster track. At point A, the cart is 10 m above the ground and travelling at 2 m/sec. Identify which energies are considered for the problem and why?

a) Identify which energies are considered for the problem and why?

b) What is the velocity at point B when the cart reaches the ground.

c) What is the velocity of the cart at point C when the cart reaches a height of 3 m?

d) What is the maximum height the cart can reach before the cart stops at point D.

(C.O.No.4) [Application]