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PRESIDENCY UNIVERSITY BENGALURU

SCHOOL OF ENGINEERING

SUMMER TERM END TERM EXAMINATION - AUGUST 2024

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| **Semester : B.TECH.** | **Date : 08-08-2024,** |
| **Course Code : CIV1008** | **Time : 09.30am to 12.30am** |
| **Course Name : Basic Engineering Sciences** | **Max Marks : 100** |
| **Program : B.TECH.** | **Weightage : 50%** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and non-programmable calculator are permitted.*
4. *Do not write any information on the question paper other than Roll Number.*

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| **PART A** | | | |
| **ANSWER ANY 4 QUESTIONS 4Q X 5M=20M** | | | |
| 1 | Define kinetic energy and provide its formula. | (CO 1) | [Knowledge] |
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| 2 | What are non-renewable energy resources? Give two examples. | (CO 2) | [Knowledge] |
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| 3 | What is a heat engine and what are its main types? | (CO 4) | [Knowledge] |
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| 4 | Explain the difference between a single-point and a multi-point cutting tool. | (CO 5) | [Knowledge] |
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| 5 | What are the main advantages of positive displacement pumps? | (CO 3) | [Knowledge] |
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| 6 | What is rolling in metal forming, and how does it change the shape of a workpiece? | (CO 2) | [Knowledge] |
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| **PART B** | | | |
| **ANSWER ANY 5 QUESTIONS 5Q X 10M=50M** | | | |
| 7 | Explain the process of heat transfer in a steam engine and how it is converted into mechanical work. | (CO 4) | [Comprehension] |
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| 8 | Describe the main components of an internal combustion engine and their functions. | (CO 3) | [Comprehension] |
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| 9 | Compare and contrast the processes of forging and wire drawing in metal forming. | (CO 4) | [Comprehension] |
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| 10 | Describe the environmental impact of using fossil fuels as an energy source and suggest ways to mitigate these effects. | (CO 5) | [Comprehension] |
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| 11 | Discuss the different types of metal removal processes and their applications. | (CO 2) | [Comprehension] |
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| 12 | Explain the process and applications of brazing in joining metals. | (CO 2) | [Comprehension] |
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| 13 | Explain the additive manufacturing process and its advantages over traditional manufacturing methods. | (CO 3) | [Comprehension] |
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| **PART C** | | | |
| **ANSWER ANY 2 QUESTIONS 2Q X 15M=30M** | | | |
| 14 | Taylor's tool life equation is given by VTn = C, where V is in m/min and T is in min. In a turning operation, two tools X and Y are used. For tool X, n = 0.3 and C = 60 and for tool Y, n = 0.6 and C = 90. Both the tools will have the same tool life for the cutting speed (in m/min, round off to one decimal place) of––––––– | (CO 5) | [Application] |
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| 15 | Calculate the electricity bill amount for a month of 30 days, if the following devices are used as specified:  a) 4 bulbs of 35 watts for 5 hours b) 2 tube lights of 55 watts for 8 hours c) 2 fridges of 350 watts for 24 hours  d) 2 oven of 1000 w for 3 hours  e) 1 Geyser of 1500w for 1.5 hours Given the rate of electricity is 2.75 Rs. per unit. | (CO 2) | [Application] |
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| 16 | Propose a detailed plan for setting up a small-scale metal fabrication workshop, including the types of machinery needed, safety protocols, and potential products. | (CO 4) | [Application] |
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