CAMBRIDGE INSTITUTE OF TECHNOLOGY

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Department of Mechanical Engineering

Sub. Name: Introduction to Mechanical Engineering **Sub. Code**: BESCK204D **Semester**: II

QUESTION BANK FOR SEMESTER END EXAMINATION

MODULE – 1

1. **Explain the role of mechanical engineers in development of industries and society. Also discuss any three sectors emerging trends and technologies.**
2. **Explain with a neat sketch, construction and working of a wind power plant. List its advantages and disadvantages.**
3. **Write short notes on Global warming and Ozone Layer Depletion.**
4. Explain with a neat sketch, construction and working of a nuclear power plant. List its advantages and disadvantages.
5. **With a neat sketch explain the working principle of hydel power plant. State its advantages and disadvantages.**
6. **Illustrate the operation of liquid flat plate collector and solar-photo-voltaic cells with neat sketch.**
7. Describe the following i) Nuclear fuels ii) Fossil fuels
8. Outline the following i) Environmental Issues ii) Bio fuels

MODULE – 2

1. **Define lathe. With neat sketch and explain the following machining operations.**
   i) Turning ii) Facing iii) Knurling iv) Taper Turning
2. **Define CNC. With block diagram, explain the different components used in CNC.**
3. **Define milling machine. With neat sketch, explain the following machining operation**
   i) Drilling ii) Reaming iii) Plane-milling iv) Slot Milling
4. Explain the following: i) Up milling ii) Down milling
5. **With the help of a block diagram, explain the basic elements of CNC machines.**
6. List the components of 3D printing. Also explain briefly stages or process of 3D printing.
7. **Explain advantages, disadvantages and applications of 3D printing.**
8. **Define 3-D printing and classify. Also explain fused deposition modeling process.**

MODULE – 3

1. **Explain, with a neat diagram, the working of a 4-stroke SI engine or petrol engine and also write P-V diagram.**
2. **Explain, with a neat diagram, the working of a 4-stroke CI engine or diesel engine and also write P-V diagram.**
3. Give a brief comparison of 4 stoke petrol and diesel engine
4. **Explain, with a block diagram, the main components of Basic electrical vehicle. Or With a help of line diagram, explain the working principle of electrical vehicle.**

5. **Explain the following with neat diagram Vehicle**
   i) Series hybrid Vehicle ii) Plug-in Hybrid Electric Vehicle (PHEV)
6. **Explain the following with neat diagram Vehicle**
   i) Parallel hybrid Vehicle ii) Fuel Cell Electric Vehicle (FCEV)
7. Mention advantages and disadvantages of EV and hybrid vehicles.
8. Discuss the limitations of Electrical vehicles over a hybrid vehicle.

MODULE – 4

1. Define Engineering Material. Briefly explain the classifications of ferrous and non ferrous materials.
2. **Define welding. With neat sketch, explain the working of Electric Are Welding.**
3. **Define the following terms:**
   i) Ceramic ii) Graphite iii) Polymers iv) Shape Memory Alloy
4. **Define Soldering. With neat sketch, explain the different types of flames used in oxy-acetylene welding.**
5. **Distinguish between Soldering and Brazing with respect to any five process parameters?**
6. What is an alloy steels? Also outline any three objectives of adding alloying elements on steel.
7. **Explain the working principle of Oxy Acetylene gas welding process with advantages, and applications?**
8. **Explain different types of ferrous and non-materials with applications.**

MODULE – 5

1. **Define mechatronics? Explain the basic elements of a closed loop control system with block diagram?**
2. **Define Industrial Robot. Explain the different configurations of Robot with neat sketch.**
3. **Discuss the different types of automation in production.**
4. **Define IOT. Briefly explain the characteristics of IOT.**
5. **Explain the logical design of lOT.**
6. **Describe the communication models with respect to IoT.**
7. **Describe the basic elements of automation system with block diagram.**
8. With a neat diagram, explain different types of robot joint.

Course Instructor
(Dr. Bharath. L)