

GUJARAT TECHNOLOGICAL UNIVERSITY

DI -1 SEMESTER – OLD PAPER – W24 TO S25 – QUESTION BANK(English)

Subject Name & Code:

Elements of Mechanical Engineering- DI01000191

Unit 1: Introduction & Basic Mechanical Tools – Application

Repeated Questions:

1. **Define Prime Movers. Write any two examples of it.**
 - Appeared in: W24 (Q1a, 03 marks)
2. **Define Force and Mass and give their fundamental units.**
 - Appeared in: S25 (Q1a, 03 marks)
3. **List four advantages and disadvantages of using a hand drill compared to a power drill.**
 - Appeared in: W24 (Q1b, 04 marks)
4. **List four types of hand tools and explain their specific application.**
 - Appeared in: S25 (Q1b, 04 marks)

Other Important Questions:

5. **Write modes of Mechanical Power Transmission.**
 - Appeared in: W24 (Q4a, 03 marks)
6. **Define shaft, Axle and Spindle.**
 - Appeared in: W24 (Q4a (OR), 03 marks)
7. **Write any three examples for need of material handling.**
 - Appeared in: W24 (Q5a (OR), 03 marks)
8. **Write three advantages and disadvantages of Belt conveyor.**
 - Appeared in: W24 (Q5a, 03 marks)
9. **List any three application of mechanical power transmission.**
 - Appeared in: S25 (Q4g, 03 marks)
10. **Write types of material handling equipment.**
 - Appeared in: S25 (Q5j, 03 marks)
11. **Write any three factors affecting for selection of material handling equipment.**
 - Appeared in: S25 (Q5m, 03 marks)

Unit 2: Properties of Gases

Repeated Questions:

1. **Define Boyle's law, give mathematical expression and draw its PV (Pressure – Volume) graph.**
 - **Appeared in:** W24 (Q2b, 04 marks)
2. **Define Charle's law, give mathematical expression and draw its VT (Volume-Temperature) graph.**
 - **Appeared in:** W24 (Q2b (OR), 04 marks)

Other Important Questions:

3. Describe combine gas law.
 - Appeared in: S25 (Q2a, 04 marks)
4. Describe Chart's law.
 - Appeared in: S25 (Q2a (OR), 04 marks)

Unit 3: Properties of Steam

Repeated Questions:

1. **Define: Wet Steam, Dry Steam, Superheated Steam and Dryness fraction of Steam.**
 - **Appeared in:** W24 (Q1c, 07 marks), S25 (Q1c, 07 marks)
2. **Define: Sensible Heat, Latent heat, Heat of Superheat and Degree of Superheat.**
 - **Appeared in:** W24 (Q1c (OR), 07 marks)
3. **Define: Sensible Heat, Latent heat, wetness fraction and Degree of Superheat.**
 - **Appeared in:** S25 (Q1d, 07 marks)

Unit 4: Steam Boilers

Repeated Questions:

1. **Give three differences between Water tube boiler and Fire tube boiler.**
 - **Appeared in:** W24 (Q2a, 03 marks)
2. **Write three advantages and disadvantages of water tube boiler over fire tube boiler.**
 - **Appeared in:** W24 (Q2a (OR), 03 marks)
3. **Explain Cochran boiler with neat Diagram.**
 - **Appeared in:** W24 (Q2c, 07 marks), S25 (Q2b (OR), 07 marks)
4. **Explain Babcock-wilcox boiler with neat diagram.**
 - **Appeared in:** W24 (Q2c (OR), 07 marks), S25 (Q2b, 07 marks)

Other Important Questions:

5. **Give detail classification of boiler.**
 - **Appeared in:** S25 (Q1e, 03 marks)
6. **Write down three the functions of Boiler.**
 - **Appeared in:** S25 (Q2c, 03 marks)

Unit 5: Internal Combustion Engines

Repeated Questions:

1. **With neat sketch explain the working of Four stroke Petrol Engine.**
 - **Appeared in:** W24 (Q3c, 07 marks), S25 (Q2c, 07 marks)
2. **With neat sketch explain the working of Four stroke Diesel Engine.**
 - **Appeared in:** W24 (Q3c (OR), 07 marks), S25 (Q3c, 07 marks)

Other Important Questions:

3. Write neat sketch within the working of Four stroke Petrol Engine.
 - Appeared in: S25 (Q2c, 07 marks) *(Note: This appears to be a slightly misworded version of the repeated question)*
4. Write neat sketch explain the working of Four stroke Diesel Engine.
 - Appeared in: S25 (Q3c, 07 marks) *(Note: This appears to be a slightly misworded version of the repeated question)*

Unit 6: Pumps

Repeated Questions:

1. **Write Classification of Pump.**
 - **Appeared in:** W24 (Q3a, 03 marks), S25 (Q2c, 03 marks)
2. **Define Priming. State the reason of requirement of Priming in Centrifugal pump but not in Reciprocating pump.**
 - **Appeared in:** W24 (Q3b, 04 marks)

Other Important Questions:

3. Define pump and write its applications.
 - Appeared in: W24 (Q3a (OR), 03 marks), S25 (Q3a, 03 marks)
4. Give four differences between Reciprocating and Centrifugal pump.
 - Appeared in: W24 (Q3b (OR), 04 marks)
5. Explain with neat sketch, working of single acting reciprocating pump.
 - Appeared in: S25 (Q3a, 04 marks)
6. Explain with neat sketch, working of double acting reciprocating pump.
 - Appeared in: S25 (Q3b, 04 marks)

Unit 7: Air Compressor

Repeated Questions:

1. **Describe with neat sketch the construction and working of single stage reciprocating air compressor.**
 - **Appeared in:** W24 (Q4c, 07 marks), S25 (Q4f, 07 marks)

Unit 8: Transmission of Motion and Power

Repeated Questions:

1. **Write down the types of Belt drive and explain any one of them.**
 - **Appeared in:** W24 (Q4b, 04 marks)
2. **Write down the types of Gear drive and explain any one of them.**
 - **Appeared in:** W24 (Q4b (OR), 04 marks)

Other Important Questions:

3. **Write down the types of Belt drive and explain Compound belt drive.**
 - **Appeared in:** S25 (Q4e, 04 marks)
4. **Write down the types of Gear drive and explain helical gear.**
 - **Appeared in:** S25 (Q4h, 04 marks)

Unit 9: Couplings, Clutches and Brakes

Repeated Questions:

1. **With neat sketch, explain the Oldham's coupling.**
 - **Appeared in:** W24 (Q5c, 07 marks)
2. **Draw and explain Single plate clutch.**
 - **Appeared in:** W24 (Q5c (OR), 07 marks)

Other Important Questions:

3. Describe with help of neat sketch the working principle of an Internal Expanding Shoe Brake.
 - Appeared in: W24 (Q4c (OR), 07 marks)
4. Describe with help of neat sketch the working principle of a block brake.
 - Appeared in: S25 (Q4i, 07 marks)
5. Write neat sketch, explain the Flange coupling.
 - Appeared in: S25 (Q5l, 07 marks)
6. Draw and explain centrifugal clutch.
 - Appeared in: S25 (Q5o, 07 marks)

Unit 10: Refrigeration and Air Conditioning

Repeated Questions:

1. **Differentiate Refrigeration and Air-conditioning.**
 - **Appeared in:** W24 (Q5b, 04 marks)
2. **Explain Vapor Compression Refrigeration (VCR) system with their main components.**
 - **Appeared in:** W24 (Q5b (OR), 04 marks), S25 (Q5n, 04 marks)

Other Important Questions:

3. **Explain with a neat sketch Split Air Conditioner.**
 - **Appeared in:** S25 (Q5k, 04 marks)

Unit 11: Material Handling Devices

Repeated Questions:

1. **Write any three examples for need of material handling.**
 - Appeared in: W24 (Q5a (OR), 03 marks)
2. **Write three advantages and disadvantages of Belt conveyor.**
 - Appeared in: W24 (Q5a, 03 marks)

Other Important Questions:

3. **Write types of material handling equipment.**
 - Appeared in: S25 (Q5j, 03 marks)
4. **Write any three factors affecting for selection of material handling equipment.**
 - Appeared in: S25 (Q5m, 03 marks)
