

# Lukhdhiraji Engineering College, Morbi

## Mechanical Engineering Department

### Mid semester Examination

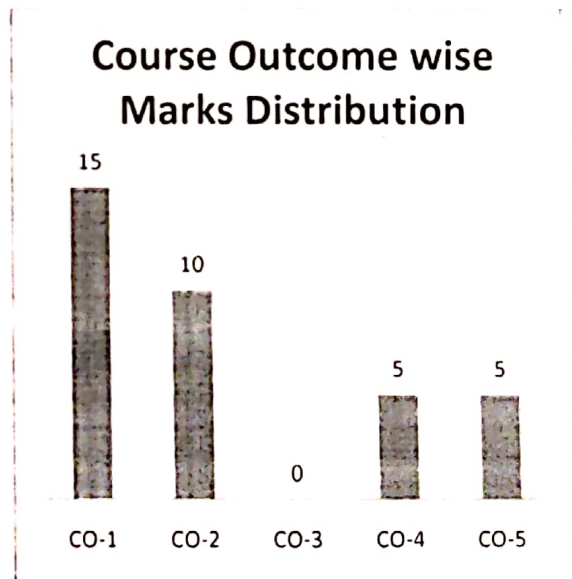
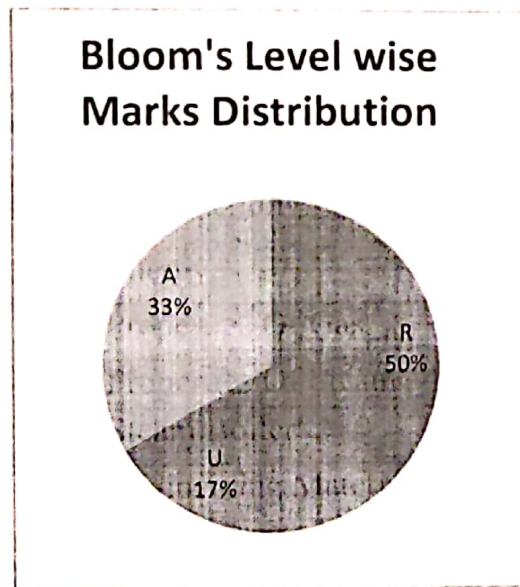
#### B.E. 1<sup>st</sup> Semester

Subject: Basics of Mechanical Engineering

Subject Code: 3110006

Date: 10/01/2022

Chapter No	Title Of Chapter	Marks	CO	BL
1	Introduction	5	CO-1	R
2	Energy	5	CO-1	R
3	Properties Of Gas	5	CO-2	A
4	Properties Of Steam	5	CO-2	A
5	Steam Boiler	5	CO-4	U
6	Engineering Materials	5	CO-5	R



BL –Bloom's Taxonomy Levels (1-Remembering, 2-Understanding, 3 –Applying, 4 –Analysing, 5 –Evaluating, 6 -Creating)

CO –Course Outcome

PO –Program Outcomes; PI Code –Performance Indicator Code

Sub Incharge:

*Reasy*

DQAC Members:

*Rwe*

*[Signature]*

# BME\_Mid exam\_2022

\* Required

## 1. Branch \*

- Mechanical
- Civil
- Electrical
- Chemical
- IT
- Power
- Industrial
- Production

## 2. Roll Number (**EX: ME-001**) \*

## 3. Name of student (Capital Letters only - **Surname \_ Name\_ Father name**) \*

4. Which of the following is not a unit of distance?

(1 Point)

- Light year
- Angstrom
- Mile
- Carat

5. The Potential energy of one kg of water in kJ at an altitude of 1200 m will be

(1 Point)

- 1200 kJ
- 280 kJ
- 11.72 kJ
- 10 kJ

6. A thermodynamic system refers to

(1 Point)

- any defined region in space
- a specified mass in fluid flow
- a specified region of constant volume
- a prescribed and identifiable quantity of matter

7. Heat and work

(1 Point)

- are contained in the system
- exist in transit
- are point functions
- none of above

8. Which of the following is an extensive property

(1 Point)

- Internal energy
- density
- temperature
- None of the above

9. Which of the following energy is converted into electricity in a Hydo power plant

(1 Point)

- Nuclear energy
- Potential Energy of water
- Thermal Energy
- all of the above

10. The function of Ozone layer is/are  
(1 Point)

- protect the earth from harmful effects of ultraviolet rays
- increase the temperature of earth
- increase CO<sub>2</sub> in atmosphere
- None of above

11. The main green house gases responsible for global warming are  
(1 Point)

- CO<sub>2</sub>
- CH<sub>4</sub>
- CFC
- all of above

12. H<sub>2</sub> is commonly used as fuel for power generation in  
(1 Point)

- cars
- buses
- fuel cells
- none of the above

13. Acid rain is the result of pollutant formed in power plants like SO<sub>2</sub> and NO<sub>x</sub>  
(1 Point)

- True
- False

14. The universal gas constant with increase in temperature will  
(1 Point)

- increase
- decrease
- remains constant
- none of the above

15. Heat supplied in an isobaric process to 2 kg of air when temperature rises by 30 Celsius is  
(1 Point)

- 30.15 kJ
- 60.3 kJ
- 30.15 kJ
- 60.3 kJ

16. Density of gas in  $\text{m}^3/\text{kg}$  at 100 kPa, 400K having  $R=250 \text{ Nm/kgK}$  in  $\text{m}^3/\text{kg}$  is equal to  
(1 Point)

- 1
- 1000
- 1/1000
- 1/100

17. A gas is having  $C_p = 1 \text{ kJ/kgK}$  and  $C_v = 0.7 \text{ kJ/kgK}$  is subjected to a process with rise in temperature  $100 \text{ Celsius}$ . The change in enthalpy per kg of gas is  
(1 Point)
- 373 kJ/kg
  - 100 kJ/kg
  - 75 kJ/kg
  - 279.75 kJ/kg
18. A gas is compressed adiabatically in a cylinder, if the thermal energy of the gas is increased by  $2 \text{ kJ}$ , calculate the work transfer during the process.  
(1 Point)
- 6 kJ
  - 6 kJ
  - 2 kJ
  - 2 kJ
19. Dryness fraction of super heated steam is equal to  
(1 Point)
- 1
  - 0
  - greater than 1
  - less than 1

20. Amount of heat required to produce 10 kg of steam at a pressure of 5 bar and temperature of 300 °C from water at 24 °C. Take  $C_p$  of steam = 2.1 kJ/kg K.  
(1 Point)

- 28568 kJ
- 29554 kJ
- 209353 kJ
- 21654 kJ

21. The specific enthalpy of 5 kg steam at 10 bar, when dryness fraction is 0.7  
(1 Point)

- 11860 kJ
- 12860 kJ
- 10860 kJ
- 10560 kJ

22. The specific enthalpy of 5 kg steam at 10 bar, when steam is superheated to 550 °C  
(1 Point)

- 14935.5 kJ
- 15935.5 kJ
- 16935.5 kJ
- 17935.5 kJ



23. 1 kg steam at pressure 15 bar and 1945.2 kJ enthalpy is  
(1 Point)

- wet steam
- dry saturated steam
- super heated steam
- saturated water

24. The function of steam drum in a boiler is to  
(1 Point)

- store steam
- store water
- separate impurities
- separate steam and water

25. Which one is externally fired boiler  
(1 Point)

- Cochran
- Babcock wilcox
- Lanchashire
- all of above

26. Fire tube boilers are not suitable for large power plants  
(1 Point)

- True
- False

27. Which of the following is boiler mounting  
(1 Point)

- super heater
- air preheater
- fusible plug
- economiser

28. Function of water level indicator is

(1 Point)

- indicate steam level
- indicate water level
- indicate water and steam level
- none of above

29. Most malleable material is  
(1 Point)

- Tin
- Cu
- Gold
- Silver

30. Material commonly used for machine tool bodies is  
(1 Point)

- copper
- mild steel
- cast iron
- wrought iron

31. The ability of a material to resist fracture due to high impact loads is called  
(1 Point)

- strength
- stiffness
- toughness
- brittleness

32. Most important property of lead is  
(1 Point)

- brittleness
- malleability
- ductility
- all of above

33. Mild steel contains ----- % of carbon  
(1 Point)

- 0 to 0.5
- 0 to 1
- 1 to 2
- 2 to 4

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