**Government Polytechnic Chapra**

Basic Mechanical Engineering (2025301)

1. What is the First Law of Thermodynamics?

2. Define conduction and provide an example of a process where conduction is prominent.

3. Explain the concept of thermal radiation and provide examples of objects that emit thermal radiation.

4. What is the hot working process ?

5. Describe the Otto cycle in internal combustion engines.

6. Discuss the factors that influence the rate of heat conduction in a material.

7. Explain the concept of entropy in thermodynamics.

8. Define the term "gearing ratio" in mechanical systems.

9. What is Hooke's Law and how is it applied in material science?

10. Describe the difference between open and closed systems in thermodynamics.

11. What is the purpose of a heat exchanger?

12. Explain the working principle of a four-stroke engine.

13. Define the term "Young's Modulus."

14. What is the difference between impulse and momentum?

15. Describe the function of a hydraulic system.

16. What is the Carnot cycle and why is it important?

17. Explain the concept of torque in mechanical systems.

18. Define Pascal's law and its applications.

19. What is the purpose of a governor in an engine?

20. Describe the function of a gear train.

21. Explain the difference between brittle and ductile materials.

22. What is the purpose of a camshaft in an engine?

23. Define the term "shear force" in mechanics.

24. What is the role of a condenser in a refrigeration system?

25. Explain the principle of conservation of mass in fluid dynamics.

26. Describe the working principle of a centrifugal pump.

27. What is the difference between impulse and impact forces?

28. Define the term "thermocouple" and its applications.

29. Explain the function of a carburetor in an internal combustion engine.

30. Describe the purpose of a heat sink in electronic devices.

31. What is the difference between static and dynamic equilibrium?

32. Define the term "creep" in material science.

33. Explain the operation of a reciprocating compressor.

34. What is the purpose of a differential in an automotive drivetrain?

35. Describe the working principle of a Pelton wheel.

36. Define the term "adiabatic process" in thermodynamics.

37. What is the role of a condenser in a steam power plant?

38. Explain the concept of thermal conductivity in heat transfer.

39. Describe the function of a clutch in a manual transmission.

40. Define the term "buoyancy" in fluid mechanics.

41. What is the difference between a worm gear and a spur gear?

42. Explain the purpose of a nozzle in fluid dynamics.

43. Define the term "tensile strength" of a material.

44. What is the function of a thrust bearing in rotating machinery?

45. Describe the working principle of a refrigeration cycle.

46. Explain the concept of resonance in mechanical systems.

47. Define the term "Coulomb friction" in mechanics.

48. What is the purpose of a condensate pump in a steam power plant?

49. Describe the working principle of a gas turbine engine.

50. Explain the difference between laminar and turbulent flow.

51. Define the term "shaft alignment" in machinery.

52. What is the significance of the Rankine cycle in thermodynamics?

53. Describe the function of a torque converter in an automatic transmission.

54. Explain the operation of a hydraulic jack.

55. Define the term "thermal expansion" in material science.

56. What is the purpose of a shock absorber in a vehicle suspension system?

57. Describe the working principle of a planetary gear system.

58. Explain the concept of specific heat in thermodynamics.

59. Define the term "hydrostatic pressure" in fluid mechanics.

60. What is the function of a thermostat in a heating system?