

★ **SSC JE 2024 – Mechanical Engineering (Paper-1)

PYQ-Based Full MCQ Question Paper**

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MECHANICAL ENGINEERING – 50 MCQs

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1. Otto cycle efficiency mainly depends on—

- A) Cut-off ratio
- B) Compression ratio
- C) Clearance volume
- D) Heat added

✓ **Correct Option: B**

2. The device used to measure air–fuel ratio is—

- A) Thermocouple
- B) Lambda sensor
- C) Pitot tube
- D) Venturimeter

✓ **Correct Option: B**

3. Refrigeration capacity is expressed in—

- A) Watt
- B) Ton
- C) Joule
- D) Rankine

✓ **Correct Option: B**

4. In a spark ignition engine, detonation is caused by—

- A) High octane fuel
- B) Low cetane number
- C) Auto-ignition of end gas
- D) Lean mixture

✓ **Correct Option: C**

5. Carnot efficiency depends on—

- A) Working fluid
- B) Type of cycle
- C) Temperature limits
- D) Pressure ratio

✓ **Correct Option: C**

6. A boiler produces—

- A) Superheated air
- B) Steam
- C) Condensate
- D) Hot water only

✓ **Correct Option: B**

7. The pressure at the throat of a Venturimeter is—

- A) Maximum
- B) Minimum
- C) Zero
- D) Constant

✓ **Correct Option: B**

8. Bernoulli's equation is based on the law of—

- A) Conservation of mass
- B) Conservation of momentum
- C) Conservation of energy
- D) Conservation of heat

✓ **Correct Option: C**

9. Cavitation in pumps occurs due to—

- A) Low temperature
- B) High pressure
- C) Low pressure at pump inlet
- D) High discharge

✓ **Correct Option: C**

10. Refrigerant R-134a is used in—

- A) Industrial boilers
- B) Domestic refrigerators
- C) Gas turbines
- D) Steam power plants

✓ **Correct Option: B**

11. Mach number is ratio of—

- A) Velocity to speed of sound
- B) Pressure to velocity
- C) Speed of sound to velocity
- D) Temperature to speed

✓ **Correct Option: A**

12. A spark plug is used in—

- A) CI engine
- B) SI engine
- C) Steam turbine
- D) Gas turbine

✓ **Correct Option: B**

13. Fuel used in compression ignition engine—

- A) Petrol
- B) Diesel
- C) LPG
- D) Ethanol

✓ **Correct Option: B**

14. Supercharging in an engine increases—

- A) Cylinder temperature
- B) Spark timing
- C) Power output
- D) Knocking tendency

✓ **Correct Option: C**

15. Brake power is measured using—

- A) Venturimeter
- B) Dynamometer
- C) Manometer
- D) Orifice meter

✓ **Correct Option: B**

16. Reynolds number is—

- A) Inertial force / Viscous force
- B) Pressure / Velocity
- C) Viscosity / Density
- D) Buoyancy / Weight

✓ **Correct Option: A**

17. In conduction heat transfer, heat flows due to—

- A) Density difference
- B) Molecular vibration
- C) Bulk motion
- D) Radiation

✓ **Correct Option: B**

18. Coefficient of performance (COP) of refrigerator =

- A) Work done / Heat rejected
- B) Heat removed / Work done
- C) Work done / Heat supplied
- D) Heat rejected / Work input

✓ **Correct Option: B**

19. For laminar flow in a pipe, Reynolds number is—

- A) < 1000
- B) < 2000
- C) < 2300
- D) < 3000

✓ **Correct Option: C**

20. Steam turbine works on—

- A) Brayton cycle
- B) Rankine cycle
- C) Diesel cycle
- D) Bell-Coleman cycle

✓ **Correct Option: B**

21. Intercooling in compressors reduces—

- A) Power consumption
- B) Pressure ratio
- C) Volumetric efficiency
- D) Temperature of cooling water

✓ **Correct Option: A**

22. Heat exchanger effectiveness =

- A) $Q_{\text{actual}} / Q_{\text{max}}$
- B) $Q_{\text{max}} / Q_{\text{actual}}$
- C) Work done / Heat added
- D) Heat rejected / Heat added

✓ **Correct Option: A**

23. Work material for laser beam machining should be—

- A) Conductive
- B) Transparent
- C) Brittle
- D) Opaque

✓ **Correct Option: D**

24. Metallurgical microscope is used for—

- A) Microstructure examination
- B) Hardness test
- C) Strength test
- D) Creep test

✓ **Correct Option: A**

25. In welding, flux is used for—

- A) Reducing heat
- B) Removing impurities
- C) Increasing voltage
- D) Increasing gas pressure

✓ **Correct Option: B**

26. Hardness test for soft metals is—

- A) Rockwell
- B) Brinell
- C) Vickers
- D) Shore

✓ **Correct Option: B**

27. The unit of viscosity in SI is—

- A) N/m^2
- B) Ns/m^2
- C) J/kg
- D) W/mK

✓ **Correct Option: B**

28. Governing in turbines is done to—

- A) Control speed
- B) Control temperature
- C) Control pressure
- D) Control steam quality

✓ **Correct Option: A**

29. In gas turbines, combustion occurs at—

- A) Constant pressure
- B) Constant volume
- C) Constant temperature
- D) Constant entropy

✓ **Correct Option: A**

30. Diesel cycle efficiency depends on—

- A) Cut-off ratio
- B) Pressure ratio

- C) Temperature only
- D) Working fluid

✓ **Correct Option: A**

31. The purpose of flywheel is to—

- A) Reduce vibrations
- B) Regulate speed fluctuations
- C) Increase power
- D) Reduce load

✓ **Correct Option: B**

32. Drill wear occurs mostly at—

- A) Flank
- B) Margin
- C) Point
- D) Shank

✓ **Correct Option: C**

33. In lathe, taper turning can be done by—

- A) Tailstock offset
- B) Drilling
- C) Reaming
- D) Boring

✓ **Correct Option: A**

34. In Rankine cycle, the pump handles—

- A) Steam
- B) Water
- C) Air
- D) Refrigerant

✓ **Correct Option: B**

35. The spark plug gap is generally—

- A) 0.2 – 0.3 mm
- B) 0.4 – 0.5 mm

- C) 0.6 – 0.9 mm
- D) 1.2 – 1.4 mm

✓ Correct Option: C

36. Heat transfer coefficient is measured in—

- A) W/m
- B) W/m²
- C) W/m²K
- D) J/kgK

✓ Correct Option: C

37. A Pelton turbine is a—

- A) Reaction turbine
- B) Axial-flow turbine
- C) Mixed-flow turbine
- D) Impulse turbine

✓ Correct Option: D

38. Draft in boilers is required for—

- A) Steam generation
- B) Removing ash
- C) Supplying air and removing flue gases
- D) Reducing temperature

✓ Correct Option: C

39. The process of removing burrs is called—

- A) Chamfering
- B) Deburring
- C) Milling
- D) Grinding

✓ Correct Option: B

40. Refrigerant with highest COP is—

- A) R22
- B) R134a

C) Ammonia

D) CO₂

✓ **Correct Option: C**

41. Boundary layer thickness depends on—

A) Velocity

B) Temperature

C) Density

D) Viscosity

✓ **Correct Option: D**

42. In welding, HAZ stands for—

A) Heat Added Zone

B) Heat Affected Zone

C) High Alloy Zone

D) High Arc Zone

✓ **Correct Option: B**

43. A dynamometer measures—

A) Temperature

B) Velocity

C) Power

D) Pressure

✓ **Correct Option: C**

44. In refrigeration, throttling is—

A) Isothermal

B) Isobaric

C) Isenthalpic

D) Isochoric

✓ **Correct Option: C**

45. Reciprocating compressor uses—

A) Centrifugal action

B) Axial flow

- C) Positive displacement
- D) Vacuum principle

✓ **Correct Option: C**

46. Flash point of fuel is—

- A) Temperature of ignition
- B) Temperature of boiling
- C) Temperature at which fuel gives vapor to ignite
- D) None

✓ **Correct Option: C**

47. A heat engine converts—

- A) Chemical energy → Heat
- B) Heat → Work
- C) Work → Heat
- D) Heat → Electricity

✓ **Correct Option: B**

48. Emissivity of a perfect black body =

- A) 0
- B) 0.5
- C) 1
- D) 100

✓ **Correct Option: C**

49. Knocking in SI engines is reduced by—

- A) Low octane fuel
- B) Retarding ignition timing
- C) Increasing spark advance
- D) Lean mixture

✓ **Correct Option: B**

50. Brayton cycle is used in—

- A) Steam turbine
- B) Gas turbine
- C) Petrol engine
- D) Diesel engine

✓ Correct Option: B

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