MODEL QUESTION PAPER

Master of Engineering/Technology (M.E./M.Tech) – Skill Assessment

(Branch-Specific | For Reference)

This Model Question Paper is provided to help candidates understand the assessment structure, format, and branches covered under the HRVIEW Master of Engineering/Technology (M.E./M.Tech) Skill Assessment.
It is intended only for reference and does not represent the actual examination paper.

Assessment Snapshot

- **Assessment Type: Model Question Paper**

- **Assessment Mode: Online**

- **Question Format: Objective Type (MCQs)**

- **Total Number of Questions: 20**

- **Pass Criteria: 75%**

Degree	Specialization
Master of Engineering / Technology (M.E. / M.Tech)	Chemical Engineering
Master of Engineering / Technology (M.E. / M.Tech)	Electrical Engineering
Master of Engineering / Technology (M.E. / M.Tech)	Civil Engineering
Master of Engineering / Technology (M.E. / M.Tech)	Mechanical Engineering
Master of Engineering / Technology (M.E. / M.Tech)	Computer Science

Note for Candidates

This is a **model reference document** intended for **general understanding only**

MODEL QUESTION PAPER

M.E. / M.Tech – Chemical Engineering

20 MCQs with Answers

1. Which equation is most commonly used to model non-ideal gas behavior?

A. Boyle's Law

B. Charles' Law

C. Van der Waals equation

D. Dalton's Law

✅ **Answer: C**

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2. The Reynolds number is used to determine:

A. Heat transfer rate

B. Flow regime

C. Reaction kinetics

D. Mass transfer coefficient

✅ **Answer: B**

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3. In a shell-and-tube heat exchanger, the primary purpose of baffles is to:

A. Increase pressure

B. Reduce corrosion

C. Increase heat transfer efficiency

D. Prevent leakage

✅ **Answer: C**

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4. Which distillation method is suitable for separating heat-sensitive materials?

A. Simple distillation

B. Fractional distillation

C. Steam distillation

D. Vacuum distillation

✅ **Answer: D**

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5. The driving force for mass transfer in diffusion is:

A. Temperature gradient

B. Pressure gradient

C. Concentration gradient

D. Velocity gradient

✅ **Answer: C**

---

6. Which catalyst property mainly affects reaction rate?

A. Density

B. Surface area

C. Color

D. Thermal conductivity

✅ **Answer: B**

---

7. The Arrhenius equation relates reaction rate constant with:

A. Pressure

B. Concentration

C. Temperature

D. Volume

✅ **Answer: C**

---

8. Which equipment is commonly used for gas–solid reactions?

A. Packed bed reactor

B. Fluidized bed reactor

C. Stirred tank reactor

D. Bubble column

✅ **Answer: B**

---

9. The Prandtl number is the ratio of:

A. Momentum diffusivity to thermal diffusivity

B. Thermal diffusivity to mass diffusivity

C. Mass diffusivity to momentum diffusivity

D. Heat capacity to viscosity

✅ **Answer: A**

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10. Which law governs molecular diffusion?

A. Fourier's Law

B. Fick's Law

C. Newton's Law

D. Stokes' Law

✅ **Answer: B**

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11. In absorption processes, the solute transfers from:

A. Liquid to gas

B. Solid to liquid

C. Gas to liquid

D. Solid to gas

✅ **Answer: C**

---

12. A CSTR operates under which condition?

A. Plug flow

B. Batch flow

C. Perfect mixing

D. Laminar flow only

✅ **Answer: C**

---

13. Which separation technique uses a semipermeable membrane?

A. Distillation

B. Adsorption

C. Filtration

D. Reverse osmosis

✅ **Answer: D**

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14. The main function of a compressor is to:

A. Increase temperature
B. Increase pressure
C. Reduce volume
D. Increase density only

✅ **Answer: B**

---

15. Which corrosion type occurs due to concentration differences?

A. Uniform corrosion
B. Pitting corrosion
C. Galvanic corrosion
D. Concentration cell corrosion

✅ **Answer: D**

---

16. The Damköhler number compares:

A. Heat and mass transfer
B. Reaction rate and flow rate
C. Pressure and velocity
D. Diffusion and convection

✅ **Answer: B**

---

17. Which process is used for separating isotopes?

A. Crystallization
B. Fractionation
C. Diffusion
D. Centrifugation

✅ **Answer: D**

---

18. Which parameter affects fluid viscosity the most?

A. Pressure
B. Velocity

C. Temperature

D. Density

✅ **Answer: C**

---

19. In packed columns, flooding occurs when:

A. Gas velocity is too low

B. Liquid flow stops

C. Gas velocity is too high

D. Packing material breaks

✅ **Answer: C**

---

20. Which reactor provides the highest conversion per unit volume for first-order reactions?

A. Batch reactor

B. CSTR

C. Plug flow reactor

D. Fluidized bed reactor

✅ **Answer: C**

MODEL QUESTION PAPER

M.E. / M.Tech – Electrical Engineering

20 MCQs with Answers

1. Which material is most commonly used for transformer cores?

A. Silicon steel
B. Copper
C. Aluminum
D. Cast iron

✅ **Answer: A**

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2. The main advantage of using HVDC transmission is:

A. Lower insulation cost
B. Reduced corona loss
C. No reactive power loss
D. Higher short-circuit capacity

✅ **Answer: C**

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3. The synchronous speed of an induction motor depends on:

A. Rotor resistance
B. Supply voltage
C. Supply frequency
D. Load torque

✅ **Answer: C**

---

4. Power factor improvement in power systems is mainly required to:

A. Increase losses
B. Reduce current
C. Increase voltage
D. Increase frequency

✅ **Answer: B**

Note for Candidates

This is a **model reference document** intended for **general understanding only**

5. In a DC generator, the function of the commutator is to:

A. Increase voltage
B. Reduce sparking
C. Convert AC to DC
D. Control speed

✅ **Answer: C**

---

6. Which device is used for overvoltage protection in power systems?

A. Circuit breaker
B. Fuse
C. Lightning arrester
D. Relay

✅ **Answer: C**

---

7. The slip of an induction motor at synchronous speed is:

A. 0
B. 1
C. Less than 1
D. Greater than 1

✅ **Answer: B**

---

8. Which transformer connection is commonly used for step-up transformers?

A. Delta–Delta
B. Delta–Star
C. Star–Star
D. Star–Delta

✅ **Answer: B**

---

9. The unit of electric field intensity is:

A. Volt
B. Volt/meter

C. Ampere/meter

D. Tesla

✅ **Answer: B**

---

10. Which control method is widely used for speed control of DC motors?

A. Rotor resistance control

B. Frequency control

C. Armature voltage control

D. Pole changing

✅ **Answer: C**

---

11. In power system stability, transient stability refers to:

A. Small disturbances

B. Steady-state operation

C. Large sudden disturbances

D. Voltage regulation

✅ **Answer: C**

---

12. Which component stores energy in a magnetic field?

A. Capacitor

B. Resistor

C. Inductor

D. Diode

✅ **Answer: C**

---

13. The efficiency of a transformer is maximum when:

A. Copper loss = Iron loss

B. Voltage is maximum

C. Current is maximum

D. Frequency is maximum

✅ **Answer: A**

Note for Candidates

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14. Which type of motor is preferred for constant speed applications?

A. DC series motor

B. DC shunt motor

C. Stepper motor

D. Universal motor

✅ **Answer: B**

---

15. Which fault is most severe in power systems?

A. Single line-to-ground

B. Line-to-line

C. Double line-to-ground

D. Three-phase fault

✅ **Answer: D**

---

16. In AC circuits, resonance occurs when:

A. XL = XC

B. R = XL

C. R = XC

D. XL > XC

✅ **Answer: A**

---

17. Which instrument measures electrical power?

A. Ammeter

B. Voltmeter

C. Wattmeter

D. Energy meter

✅ **Answer: C**

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18. The main function of a relay is to:

A. Generate power

B. Measure voltage

C. Protect the system

D. Improve power factor

✅ **Answer: C**

---

19. Which semiconductor device is used as a controlled switch?

A. Diode

B. BJT

C. SCR

D. Zener diode

✅ **Answer: C**

---

20. Which method is used for starting large induction motors?

A. Direct-on-line starter

B. Star–Delta starter

C. Auto-transformer starter

D. Rotor resistance starter

✅ **Answer: C**

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MODEL QUESTION PAPER

M.E. / M.Tech – Civil Engineering

20 MCQs with Answers

1. Which test is used to determine the workability of concrete?

A. Compression test
B. Slump test
C. Tensile test
D. Flexural test

✅ **Answer: B**

---

2. The primary purpose of reinforcement in concrete is to resist:

A. Compression
B. Shear
C. Tension
D. Torsion

✅ **Answer: C**

---

3. Which soil type has the highest bearing capacity?

A. Clay
B. Silt
C. Sand
D. Gravel

✅ **Answer: D**

---

4. The standard grade of cement most commonly used in RCC work is:

A. 33 grade
B. 43 grade
C. 53 grade
D. Portland Pozzolana Cement

✅ **Answer: B**

Note for Candidates

This is a **model reference document** intended for **general understanding only**

5. In limit state design, the partial safety factor for load is generally:

A. 1.0

B. 1.2

C. 1.5

D. 2.0

✅ **Answer: C**

---

6. Which foundation is suitable for black cotton soil?

A. Isolated footing

B. Raft foundation

C. Pile foundation

D. Strip footing

✅ **Answer: C**

---

7. The modulus of elasticity of concrete depends mainly on:

A. Cement content

B. Water–cement ratio

C. Aggregate properties

D. Age of concrete

✅ **Answer: C**

---

8. Which instrument is used for measuring horizontal angles in surveying?

A. Dumpy level

B. Theodolite

C. Plane table

D. Auto level

✅ **Answer: B**

---

9. The most suitable cement for marine structures is:

A. Ordinary Portland Cement

B. Rapid hardening cement

Note for Candidates

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C. Low heat cement

D. Sulphate resistant cement

✅ **Answer: D**

---

10. The term "creep" in concrete refers to:

A. Shrinkage due to drying

B. Time-dependent deformation under constant load

C. Elastic deformation

D. Sudden failure

✅ **Answer: B**

---

11. Which type of stress develops due to bending?

A. Compressive stress only

B. Tensile stress only

C. Shear stress only

D. Both tensile and compressive stress

✅ **Answer: D**

---

12. The factor of safety is defined as the ratio of:

A. Working load to ultimate load

B. Ultimate load to working load

C. Yield stress to working stress

D. Breaking stress to allowable stress

✅ **Answer: B**

---

13. Which type of dam is suitable for narrow valleys with strong rock foundation?

A. Earth dam

B. Gravity dam

C. Arch dam

D. Buttress dam

✅ **Answer: C**

Note for Candidates

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14. In transportation engineering, camber is provided to:

A. Increase speed

B. Reduce vehicle wear

C. Drain off rainwater

D. Improve aesthetics

✅ **Answer: C**

---

15. Which method is used to improve soil bearing capacity?

A. Soil stabilization

B. Soil erosion

C. Soil excavation

D. Soil classification

✅ **Answer: A**

---

16. The unit weight of water is approximately:

A. 9.81 kN/m³

B. 10 kN/m³

C. 1000 kN/m³

D. 1 kN/m³

✅ **Answer: A**

---

17. Which test determines the shear strength of soil?

A. Atterberg limits test

B. Proctor test

C. Direct shear test

D. Permeability test

✅ **Answer: C**

---

18. In structural analysis, a statically determinate structure is one in which:

A. Number of unknowns > equations

B. Number of unknowns = equations

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C. Number of unknowns < equations

D. No unknowns exist

✅ **Answer: B**

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19. The main function of a retaining wall is to:

A. Support vertical loads
B. Prevent soil erosion
C. Retain lateral earth pressure
D. Improve drainage

✅ **Answer: C**

---

20. Which IS code deals with the design of reinforced concrete structures?

A. IS 456
B. IS 800
C. IS 875
D. IS 1893

✅ **Answer: A**

MODEL QUESTION PAPER

M.E. / M.Tech – Mechanical Engineering

20 MCQs with Answers

1. Which law of thermodynamics defines the conservation of energy?

A. Zeroth law
B. First law
C. Second law
D. Third law

✅ **Answer: B**

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2. The efficiency of a Carnot engine depends on:

A. Working substance
B. Engine speed
C. Temperature limits
D. Pressure ratio

✅ **Answer: C**

---

3. In a steam turbine, the function of the nozzle is to:

A. Increase pressure
B. Increase velocity
C. Reduce temperature
D. Increase volume

✅ **Answer: B**

---

4. Which cycle is used in gas turbine power plants?

A. Rankine cycle
B. Otto cycle
C. Diesel cycle
D. Brayton cycle

✅ **Answer: D**

---

5. The primary function of a flywheel is to:

A. Increase power
B. Reduce vibrations
C. Store energy
D. Increase torque

✅ **Answer: C**

---

6. Which material property indicates resistance to sudden impact?

A. Hardness
B. Toughness
C. Ductility
D. Brittleness

✅ **Answer: B**

---

7. Which bearing is used to support axial loads?

A. Journal bearing
B. Ball bearing
C. Thrust bearing
D. Roller bearing

✅ **Answer: C**

---

8. In machining, which operation is used to produce internal threads?

A. Turning
B. Drilling
C. Tapping
D. Boring

✅ **Answer: C**

---

9. The coefficient of performance (COP) of a refrigerator is defined as:

A. Work output / heat input
B. Heat rejected / work input

Note for Candidates

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C. Heat absorbed / work input

D. Work input / heat absorbed

✅ **Answer: C**

---

10. Which process is used to improve surface hardness?

A. Annealing

B. Normalizing

C. Case hardening

D. Tempering

✅ **Answer: C**

---

11. The function of a governor in an engine is to:

A. Control fuel consumption

B. Control engine speed

C. Control temperature

D. Control torque

✅ **Answer: B**

---

12. Which type of stress is induced due to torsion?

A. Tensile stress

B. Compressive stress

C. Shear stress

D. Bending stress

✅ **Answer: C**

---

13. The most efficient heat transfer mode is:

A. Conduction

B. Convection

C. Radiation

D. Depends on medium

✅ **Answer: D**

Note for Candidates

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14. Which welding process uses a non-consumable electrode?

A. MIG welding
B. TIG welding
C. Arc welding
D. Gas welding

✅ **Answer: B**

---

15. In IC engines, knocking is caused by:

A. Late ignition
B. Pre-ignition
C. Auto-ignition of fuel
D. Excess air

✅ **Answer: C**

---

16. The purpose of a clutch is to:

A. Increase speed
B. Increase torque
C. Engage and disengage power
D. Reduce vibration

✅ **Answer: C**

---

17. Which machine element is used to transmit power between parallel shafts?

A. Belt drive
B. Bevel gear
C. Worm gear
D. Screw

✅ **Answer: A**

---

18. In refrigeration, the refrigerant should have:

A. High boiling point
B. Low latent heat

C. High latent heat

D. High viscosity

✅ **Answer: C**

---

19. Which test is used to measure hardness?

A. Izod test

B. Charpy test

C. Brinell test

D. Tensile test

✅ **Answer: C**

---

20. Which power plant has the highest overall efficiency?

A. Thermal power plant

B. Nuclear power plant

C. Diesel power plant

D. Combined cycle power plant

✅ **Answer: D**

MODEL QUESTION PAPER

M.E. / M.Tech – Computer Science Engineering

20 MCQs with Answers

1. Which data structure is used to implement recursion?

A. Queue
B. Stack
C. Linked List
D. Tree

✅ **Answer: B**

---

2. The time complexity of binary search is:

A. O(n)
B. O(log n)
C. O(n log n)
D. O(1)

✅ **Answer: B**

---

3. Which protocol is used for secure communication over the internet?

A. HTTP
B. FTP
C. SMTP
D. HTTPS

✅ **Answer: D**

---

4. In object-oriented programming, encapsulation refers to:

A. Code reuse
B. Hiding implementation details
C. Multiple inheritance
D. Function overloading

✅ **Answer: B**

---

5. Which scheduling algorithm may cause starvation?

A. FCFS
B. Round Robin
C. Priority scheduling
D. SJF (non-preemptive)

✅ **Answer: C**

---

6. The primary key in a database is used to:

A. Sort records
B. Allow duplicate values
C. Uniquely identify records
D. Link two databases

✅ **Answer: C**

---

7. Which normal form removes partial dependency?

A. 1NF
B. 2NF
C. 3NF
D. BCNF

✅ **Answer: B**

---

8. Which algorithm is used for finding the shortest path in a graph?

A. DFS
B. BFS
C. Dijkstra's algorithm
D. Kruskal's algorithm

✅ **Answer: C**

---

9. In computer networks, latency refers to:

A. Data transfer rate
B. Packet loss

Note for Candidates

This is a **model reference document** intended for **general understanding only**

C. Delay in data transmission

D. Network bandwidth

✅ **Answer: C**

---

10. Which type of memory is non-volatile?

A. RAM

B. Cache

C. Register

D. ROM

✅ **Answer: D**

---

11. Which machine learning technique is used for classification?

A. K-means clustering

B. Linear regression

C. Decision tree

D. Apriori algorithm

✅ **Answer: C**

---

12. Which SQL command is used to remove a table completely?

A. DELETE

B. REMOVE

C. DROP

D. TRUNCATE

✅ **Answer: C**

---

13. Deadlock occurs when:

A. CPU utilization is high

B. Processes wait indefinitely for resources

C. Memory is insufficient

D. Disk I/O is slow

✅ **Answer: B**

Note for Candidates

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14. Which programming paradigm focuses on functions and immutability?

A. Object-oriented
B. Procedural
C. Functional
D. Logic

✅ **Answer: C**

---

15. Which encryption technique uses the same key for encryption and decryption?

A. RSA
B. ECC
C. Asymmetric encryption
D. Symmetric encryption

✅ **Answer: D**

---

16. Which data structure is best suited for implementing priority queues?

A. Stack
B. Queue
C. Heap
D. Array

✅ **Answer: C**

---

17. The role of an operating system is to:

A. Compile programs
B. Manage hardware and software resources
C. Provide internet access
D. Run only system programs

✅ **Answer: B**

---

18. Which sorting algorithm has the best average-case time complexity?

A. Bubble sort
B. Insertion sort

C. Quick sort

D. Selection sort

✅ **Answer: C**

---

19. Which cloud service model provides infrastructure like virtual machines?

A. SaaS

B. PaaS

C. IaaS

D. FaaS

✅ **Answer: C**

---

20. Which concept ensures data consistency in databases?

A. Normalization

B. Indexing

C. ACID properties

D. Data mining

✅ **Answer: C**