

WB JELET Sample Paper – Practice Test

Section A: Engineering Mathematics (5 Questions)

Q1. Evaluate the Laplace transform of $f(t)=t^2$.

A) $1/s^2$

B) $2/s^3$

C) $2/s^2$

D) $2/s^4$

Correct Answer: B

Q2. If $A = \begin{bmatrix} 2 & 1 & 0 & 3 \end{bmatrix}$, find the eigenvalues of A.

A) 2, 3

B) 1, 3

C) 2, 2

D) 3, 3

Correct Answer: A

Q3. Find the derivative of $f(x)=e^x \sin x$

A) $e^x \cos x$

B) $e^x (\sin x + \cos x)$

C) $e^x (\cos x - \sin x)$

D) $\sin x + \cos x$

Correct Answer: B

Q4. What is the integral $\int \frac{1}{x^2+1} dx$?

A) $\ln|x|+C$

B) $\tan^{-1} x+C$

C) $\frac{1}{x} + C$

D) $-\frac{1}{x} + C$

Correct Answer: B

Q5. The solution of the differential equation $\frac{dy}{dx}=ky$, where k is a constant, is:

A) $y=e^x$

B) $y=ke^x$

C) $y=Ce^{kx}$

D) $y=kx$

Correct Answer: C

Section B: Computer Science (5 Questions)

Q6. Which data structure uses LIFO (Last-In, First-Out)?

A) Queue

B) Stack

C) Linked List

D) Tree

Correct Answer: B

Q7. In C, which of the following is a valid declaration?

A) `int 2var;`

B) `int var_2;`

C) `int@var;`

D) `int var-2;`

Correct Answer: B

Q8. What is the time complexity of binary search in a sorted array?

- A) $O(n)$
- B) $O(n^2)$
- C) $O(\log n)$
- D) $O(1)$

Correct Answer: C

Q9. Which logic gate has output 1 only when both inputs are 1?

- A) OR
- B) NOR
- C) AND
- D) XOR

Correct Answer: C

Q10. Which layer of the OSI model ensures reliable transmission of data?

- A) Network Layer
- B) Data Link Layer
- C) Transport Layer
- D) Application Layer

Correct Answer: C

Section C: Electrical Engineering (5 Questions)

Q11. What is the unit of electrical capacitance?

- A) Ohm
- B) Volt
- C) Farad

D) Henry

Correct Answer: C

Q12. The current through a resistor is directly proportional to:

A) Capacitance

B) Voltage

C) Inductance

D) Resistance

Correct Answer: B

Q13. A diode allows current to flow in:

A) Both directions

B) Reverse direction only

C) Forward direction only

D) No direction

Correct Answer: C

Q14. The frequency of the AC power supply in India is:

A) 50 Hz

B) 60 Hz

C) 100 Hz

D) 25 Hz

Correct Answer: A

Q15. In a series RLC circuit at resonance, the impedance is:

A) Maximum

B) Minimum

C) Infinite

D) Zero

Correct Answer: B

Section D: Mechanical Engineering (5 Questions)

Q16. The ratio of stress to strain is:

A) Poisson's ratio

B) Young's modulus

C) Bulk modulus

D) Modulus of rigidity

Correct Answer: B

Q17. A 4-stroke engine completes one power stroke in:

A) Every 2 revolutions

B) Every 1 revolution

C) Every 4 revolutions

D) Every 3 revolutions

Correct Answer: A

Q18. The unit of power is:

A) Newton

B) Watt

C) Joule

D) Pascal

Correct Answer: B

Q19. Bernoulli's theorem deals with the conservation of:

- A) Mass
- B) Pressure
- C) Energy
- D) Temperature

Correct Answer: C

Q20. Which of the following is used as a refrigerant in domestic refrigerators?

- A) Ammonia
- B) Freon
- C) CO₂
- D) Nitrogen

Correct Answer: B

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