Techno College of Engineering Agartala

An Engineering College, Affiliated to Tripura University,
Approved by AICTE, MHRD, Govt. of India

TCEALET/EA/2022 **TEST BOOKLET** **Test Booklet Series**

ENGINEERING APTITUDE **B**

Time Allowed: One (01) hour **Maximum Marks: 60**

INSTRUCTION TO BE READ CAREFULLY BY THE CANDIDATE

1. Please check the test booklet does not have any unprinted or detached or missing pages or items etc. If it happens, get it replaced by a complete test booklet.

2. No candidate will be allowed to enter the Examination hall/room after commencement of Examination and shall not be allowed to leave the Examination hall/room till the Examination is over.

3. Encode clearly the Test Booklet Series A, B, C as the case may be in the appropriate place in the answer sheet **by BLACK BALL POINT PEN ONLY.**

4. **This Test Booklet contains 60 questions and each carrying one marks**. No negative marking for wrong answer. In any case, **choose only one response for each question.**

5. If a candidate gives more than one answer, it will be treated as a **WRONG ANSWER** even if one of the given answers happens to be correct.

6. Use of calculator, mobile phone or any type of electronic gadgets is strictly prohibited.

7. The candidates shall have to handover the original answer scripts to the invigilator before finally leaving the Examination hall/room.

8. Any candidate found guilty of using unfair means of any nature in the Examination hall/room shall be disqualified.

9. ***COVID 19 guidelines/SOP issued by the Govt. is to be strictly followed during examination.***

_____ _____

(Candidate Roll Number) **(Signature of the Candidate)**

_____

(Invigilator's Signature)

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO.

SET B

1. According to principle of transmissibility of forces, the effect of a force upon a body is
A. maximum when it acts at the center of gravity of a body
B. different at different points in its line of action
C. the same at every point in its line of action
D. minimum when it acts at the C.G. of the body

2. The slope of the stress-strain curve in the elastic deformation region is _____
a) Elastic modulus
b) Plastic modulus
c) Poisson's ratio
d) None of the mentioned

3. Poisson's ratio is unitless
a) TRUE b) FALSE
c) Can be true or false d) Can not say

4. The Q factor of a coil is
a) inversely proportional to resistance of the coil
b) directly proportional to resistance of the coil
c) inversely proportional to inductive reactance of the coil

5. D.C. shunt motors are used in those applications where
a) high starting torque is required
b) practically constant speed is required
c) high no-load speed is required
d) variable speed is required

6. Which of the following is not a part of photochemical smog?
a) NO_2 b) O_3
c) PAN d) SPM

7. Under the condition of maximum power transfer, the efficiency is
a)75% b)100%
c)50% d)25%

8. The full form of CSS is
a) Cascading Style Sheets
b) Coloured Special Sheets
c) Color and Style Sheets
d) None of the above

9. The maximum frictional force which comes into play when a body just begins to slide over another surface is called
A. Limiting friction B. Sliding friction
C. Rolling friction D. Kinematic friction

10. Moment of inertia of a rectangular section having width (b) and depth (d) about an axis passing through its C.G. and parallel to the depth (d), is
A. $db^3/12$ B. $bd^3/12$
C. $db^3/36$ D. $bd^3/36$

11. What is the limiting value of Poisson's ratio?
a) -1 and 0.5 b) -1 and -0.5
c) -1 and -0.5 d) 0 and 0.5

12. Which water treatment process is done after filtration of water?
a) Primary sedimentation
b) Disinfection
c) Secondary sedimentation
d) Flocculation

13. Moment of inertia of a circular section about an axis perpendicular to the section is
A. $\pi d^3/16$ B. $\pi d^3/32$
C. $\pi d^4/32$ D. $\pi d^4/64$

14. Inertia is _____
a) Property of mass to remain unchanged
b) Property of mass to change continuously
c) Property of mass to accelerate
d) Tendency of mass to accelerate

15. Which gas is mainly produced due to incomplete burning of wood?

a) CO b) SO_2

c) NO_2 d) NO_3

16. Electrical appliances are connected in parallel because it

a) is a simple circuit

b) draws less current

c) results in reduced power loss

d) makes the operation of appliances independent of each other

17. In India, the distribution of electric power is done by-

a) 3-phase, 3-wire a.c. system

b) 3-phase, 4-wire a.c. system

c) 1-phase system

d) 1-phase d.c. system

18. A fuse is a

a) Protective device

b) Current limiting device

c) Current controlling device

d) Fault detecting device

19. Which of the following is involved in production of carboxyhaemoglobin?

a) CO b) SO_2

c) NO_2 d) NO_3

20. The a.c. system is preferred to d.c. system because

a) a.c. voltages can be easily changed in magnitude

b) d.c. motors do not have fine speed control

c) high voltage ac transmission is less efficient

d) d.c. voltages cannot be used for domestic appliances

21. The triangle joining the points $A(2,7), B(4,-1), C(-2,6)$ is

a) equilateral b) right angled

c) isosceles d) none of these

22. If a part is constrained to move and heated, it will develop

a) Principal stress b) Tensile stress

c) Compressive stress d) Shear stress

23. Find the elongation of an steel rod of 100mm length when it is subjected to a tensile strain of 0.005?

a) 0.2mm b) 0.3mm

c) 0.4mm d) 0.5mm

24. If $y = \sin(x^3)$, then $\frac{dy}{dx}$ is

(i) $\sin(x^3)$ (ii) $3x^2 \sin(x^3)$

(iii) $\cos(x^3)$ (iv) $3x^2 \cos(x^3)$

25. $\vec{a}.\vec{b} = 0$ implies that

a) $\vec{a} = 0$ b) $\vec{b} = 0$

b) $\theta = 90^\circ$ c) either $\vec{a} = 0$ or $\vec{b} = 0$

26. The neutral axis of the cross-section a beam is that axis at which the bending stress is

a) Zero b) Minimum

c) Maximum d) Infinity

27. In the torsion equation $\frac{T}{J} = \frac{\tau}{R} = \frac{C\theta}{l}$ the term J/R is called

a) Shear modulus b) Section modulus

c) Polar modulus d) None of these

28. Kirchhoff's voltage law deals with

a) Conservation of charge

b) Conservation of energy

c) Conservation of momentum

d) Conservation of angular momentum

29. M.M.F in a magnetic circuit corresponds to

a. Voltage drop in a electric circuit

b. Potential difference in a electric circuit

c. Electric intensity in a electric circuit

d. Electromotive force in a electric circuit

30. Strain energy is the

a) Energy stored in a body when strained within elastic limits

b) Energy stored in a body when strained upto the breaking of a specimen

c) Maximum strain energy which can be stored in a body

d) Proof resilience per unit volume of a material

31. What type of colloid is an aerosol?

a) Solid in gas

b) Gas in solid or fluid

c) Fluid in gas

d) Fluid or solid in gas

32. If $\begin{vmatrix} 3x & 7 \\ -2 & 4 \end{vmatrix} = \begin{vmatrix} 8 & 7 \\ 6 & 4 \end{vmatrix}$, find the value of x.

a)2 b)8/3

c)– 2 d)3/8

33. If $y = e^x(\sin x + \cos x)$, then $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + 2y =$ is

a)0 b)1

c)2 d)3

34. An HTML document can contain _____

a) AttributesB b)Tags

c) Raw textD d)All the answers are true

35. A coin is tossed twice. Find the probability of getting at most one head

a) 1/2 b) 2/3

b) 1/4 c) ¾

36. Choose the correct HTML tag for a large title.

a)H1 b)Heading

c)Head d)H6

37. In which language UNIX is written?

) C++ b) C

) JAVA d) Python

38. How can we change the background color of an element?

a) background-color b)color

b) Both A and B c)None of the above

39. The moment of inertia of a solid sphere of mass 'm' and radius 'r' is

a)$2mr^2/3$ b)$2mr^2/5$

c)mr^2 d)$mr^2/2$

40. At the point of contraflexure, the value of bending moment is _____

a) Zero b) Maximum

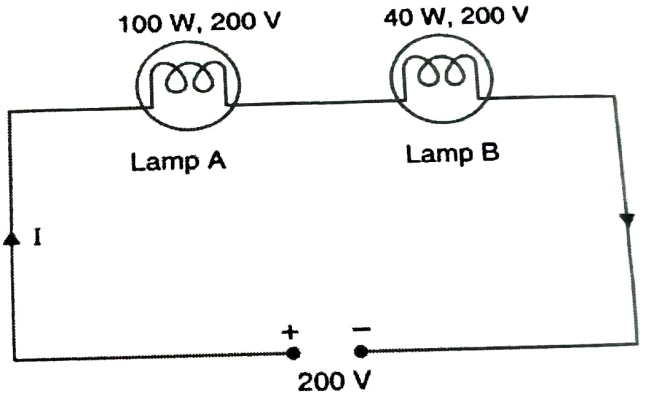
c) Can't be determined d) Minimum

41. Which point on the stress strain curve occurs after the ultimate point?

a) Last point b) Breaking point

c) Elastic limit d) Material limit

42. The total equivalent resistance of the circuit will be



a)1000 Ω b)400 Ω

c)1400 Ω d)135 Ω

43. Which air pollutant cause corrosion of building?

a) SO_2 b) SO_3

c) CO d) NO_2

44. Which of the following air pollutant effects plants the most?

a) Fluorine b) SO_2

c) PAN d) HCl

45. The permanent hardness in water is due to the presence of

a) Sulfates, Chlorides

b) Sulfates, chlorides, nitrates

c) Carbonates and bicarbonates

d) Sulfates and carbonates

46. Let A and B be the events such that P(A) = 1/3, P(B) = 1/4 and $P(A \cap B) = 1/5$then $P(A \cup B)$ is

i) 21/60 ii) 23/60

iii) 25/60 iv) 27/60

47. System software acts as a bridge between the hardware and _____ software?

a)Management b)Processing

c)Utility d)Application

48. How can we change the text color of an element?

a)background-color b)color

c)Both A and B d)None of the above

49. Which of the following causes the temporary hardness?

a) $CaSO_4$ b) $MgSO_4$

c) $MgCl_2$ d) $Ca(HCO3)_2$

50. The Unix shell is both _____ and _____ language.

a) scripting, interpreter b) high level, low level

c) interactive, responsive d) interpreter, executing

51. An ideal machine is one whose efficiency is

a) Between 60 and 70 % b) Between 70 and 80%

c) Between 80 and 90% d) 100%

52. Flash drive is popularly known as

a)Microprocessor b)RAM

c)ROM d)Pen drive

53. What is a free-body diagram?

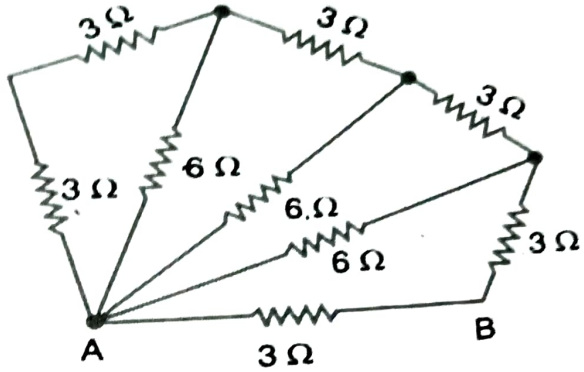
a) It's a sketch of a moving body that shows internal forces of the body and reaction forces

b) It's a sketch of an undisturbed body that shows external forces of the body

c) It's a sketch of an isolated body that shows external forces of the body and reaction forces

d) It's a sketch of a body in motion that shows bending forces of the body

54. Find the effective resistance between A and B



a) 3Ω b)2Ω

c)5Ω d)6Ω

55. Let A and B be the events such that P(A) = 1/3, P(B) = 1/4 and $P(A \cap B) = 1/5$then $P(A \cup B)$ is

i) 21/60 ii) 23/60

iii) 25/60 iv) 27/60

56. The value of $\sin 50^\circ - \sin 70^\circ + \sin 10^\circ$ is

(i) $\frac{1}{2}$

(ii) $\frac{1}{\sqrt{2}}$

(iii) 1

(iv) 0

57. The normal dose of chlorine during post chlorination is _____

a) 0.5-1ppm b) 0.1-0.2ppm

c) 0.1-0.5ppm d) 1-2ppm

58. What is Unix?

a) Unix is a programming language

b) Unix is a software program

c) Unix is an operating system

d) Unix is a text editor

59. The M.I. of hollow circular section about a central axis perpendicular to section as compared to its M.I. about horizontal axis is

A. Same

B. Double

C. Half

D. Four times

60. Dynamic friction as compared to static friction is

a) Same

b) More

c) Less

d) May be less of more depending on nature of surfaces and velocity

****** SPACE FOR ROUGH WORK ******