

# Mock Test 16 – MUET Entry Test Preparation

## Instructions

- **Time:** 60 minutes.
- **Format:** 100 multiple-choice questions (25 Mathematics, 25 Physics, 25 Chemistry, 25 English).
- **Rules:** Each question has 4 options; only one is correct. No calculator allowed.
- **Purpose:** Simulates MUET entry test patterns, incorporates requested Chemistry topics, predicts 2025 trends, and ensures error-free questions for comprehensive preparation.

## Mathematics (25 MCQs)

1. The value of  $\tan 60^\circ$  is:  
A.  $\frac{1}{\sqrt{3}}$  B.  $\sqrt{3}$  C.  $\frac{1}{2}$  D. 1
2. If  $\cos \theta = \frac{5}{13}$  and  $\theta$  is in the first quadrant, then  $\sin \theta =$ :  
A.  $\frac{12}{13}$  B.  $\frac{5}{12}$  C.  $\frac{13}{12}$  D.  $\frac{12}{5}$
3. The solution to the system  $3x + 2y = 12$  and  $x - y = 1$  is:  
A. (2, 1) B. (1, 2) C. (3, 1) D. (2, 3)
4. The number of permutations of 4 distinct objects taken 2 at a time is:  
A. 6 B. 12 C. 16 D. 24
5. The 5th term of the geometric sequence with first term 2 and common ratio 3 is:  
A. 54 B. 162 C. 486 D. 18
6. If  $z = 3 - 4i$ , then  $|z| =$ :  
A. 5 B. 7 C. 9 D. 12
7. The equation of the line parallel to  $y = -3x + 4$  and passing through (1, 2) is:  
A.  $y = -3x + 5$  B.  $y = -3x + 2$  C.  $y = 3x - 1$  D.  $y = -3x + 1$
8. If  $\log_5 25 = x$ , then  $x =$ :  
A. 1 B. 2 C. 3 D. 4
9. The derivative of  $\sin(2x)$  with respect to  $x$  is:  
A.  $2 \cos(2x)$  B.  $\cos(2x)$  C.  $2 \sin(2x)$  D.  $-\cos(2x)$
10. The probability of drawing a red card from a standard deck of 52 cards is:  
A.  $\frac{1}{4}$  B.  $\frac{1}{2}$  C.  $\frac{1}{3}$  D.  $\frac{2}{3}$
11. If  $A = \{1, 3, 5\}$  and  $B = \{2, 3, 4\}$ , then  $A - B =$ :  
A.  $\{1, 5\}$  B.  $\{3\}$  C.  $\{2, 4\}$  D.  $\emptyset$
12. The focus of the parabola  $y^2 = 8x$  is:  
A. (2, 0) B. (0, 2) C. (4, 0) D. (0, 4)
13. The value of  $\sin^{-1}(1)$  is:  
A.  $\frac{\pi}{6}$  B.  $\frac{\pi}{4}$  C.  $\frac{\pi}{3}$  D.  $\frac{\pi}{2}$
14. If  $f(x) = 3x - 2$ , then  $f^{-1}(x) =$ :  
A.  $\frac{x+2}{3}$  B.  $\frac{x-2}{3}$  C.  $3x + 2$  D.  $\frac{3}{x+2}$
15. The sum of an infinite geometric series with first term 4 and common ratio  $\frac{1}{2}$  is:  
A. 6 B. 8 C. 12 D. 16
16. If  $\tan 2\theta = 1$ , then  $\theta =$  (in first quadrant):  
A.  $30^\circ$  B.  $45^\circ$  C.  $60^\circ$  D.  $90^\circ$
17. The number of solutions to  $x^2 - 5x + 6 = 0$  is:  
A. 0 B. 1 C. 2 D. 3

18. The magnitude of the vector  $(-3, 4)$  is:  
A. 5    B. 7    C. 9    D. 12
19. If  $3^x = 9$ , then  $x =$ :  
A. 1    B. 2    C. 3    D. 4
20. The angle between vectors  $(1, 1)$  and  $(1, -1)$  is:  
A.  $30^\circ$     B.  $45^\circ$     C.  $90^\circ$     D.  $180^\circ$
21. The perimeter of a rectangle with length 10 cm and width 6 cm is:  
A. 16 cm    B. 32 cm    C. 60 cm    D. 80 cm
22. The integral  $\int (2x^2 + 1) dx$  is:  
A.  $\frac{2x^3}{3} + x + C$     B.  $\frac{x^3}{3} + x + C$     C.  $2x^3 + x + C$     D.  $\frac{2x^2}{3} + x + C$
23. The mode of the data set 3, 5, 5, 7, 9 is:  
A. 3    B. 5    C. 7    D. 9
24. If  $A = \begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix}$ , then  $\text{adj}(A) =$ :  
A.  $\begin{bmatrix} 3 & -1 \\ -2 & 4 \end{bmatrix}$     B.  $\begin{bmatrix} 4 & -1 \\ -2 & 3 \end{bmatrix}$     C.  $\begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$     D.  $\begin{bmatrix} 4 & 1 \\ 2 & 3 \end{bmatrix}$
25. The sum of the first 5 terms of the sequence 1, 4, 9, 16, ... is:  
A. 45    B. 55    C. 65    D. 75

### Physics (25 MCQs)

26. The SI unit of torque is:  
A.  $\text{N} \cdot \text{m}$     B. Joule    C. Watt    D.  $\text{N/m}$
27. The uncertainty principle is associated with:  
A. Newton    B. Einstein    C. Heisenberg    D. Bohr
28. The angular momentum of a particle is given by:  
A.  $mvr$     B.  $\frac{mv}{r}$     C.  $mv^2r$     D.  $\frac{mvr}{2}$
29. The dimensional formula of pressure is:  
A.  $\text{ML}^{-1}\text{T}^{-2}$     B.  $\text{MLT}^{-2}$     C.  $\text{ML}^2\text{T}^{-2}$     D.  $\text{M}^{-1}\text{LT}^{-2}$
30. The time period of a simple pendulum is proportional to:  
A. Mass of bob    B.  $\sqrt{\text{length}}$     C. Amplitude    D. Gravity
31. The critical angle depends on:  
A. Wavelength    B. Refractive index    C. Temperature    D. All of These
32. The SI unit of magnetic flux is:  
A. Tesla    B. Weber    C. Henry    D. Ampere
33. The terminal velocity of a falling object occurs when:  
A. Acceleration is maximum    B. Net force is zero    C. Velocity is zero    D. Drag force is zero
34. The formula for capacitance is:  
A.  $\frac{Q}{V}$     B.  $\frac{V}{Q}$     C.  $QV$     D.  $\frac{Q^2}{V}$
35. The frequency of a wave is:  
A. Number of waves per second    B. Distance between waves    C. Height of wave    D. Speed of wave
36. The energy of a photon is given by:  
A.  $E = mc^2$     B.  $E = hf$     C.  $E = \frac{hc}{\lambda}$     D. Both B and C
37. The unit of specific heat capacity is:  
A.  $\text{J/kg} \cdot \text{K}$     B.  $\text{J/K}$     C.  $\text{W/m} \cdot \text{K}$     D.  $\text{J/m}^2$

38. The potential difference across a resistor is measured by:  
A. Ammeter   B. Voltmeter   C. Galvanometer   D. Ohmmeter
39. The binding energy of a nucleus is:  
A. Energy to split nucleus   B. Energy to form nucleus   C. Energy of protons   D. Energy of neutrons
40. The formula for centripetal force is:  
A.  $\frac{mv^2}{r}$    B.  $mv^2r$    C.  $\frac{mv}{r}$    D.  $mvr$
41. The polarization of light proves its:  
A. Particle nature   B. Wave nature   C. Dual nature   D. Quantum nature
42. The Heisenberg uncertainty principle applies to:  
A. Position and momentum   B. Energy and time   C. Both A and B   D. Velocity and mass
43. The work done by a gas during isothermal expansion depends on:  
A. Pressure   B. Volume change   C. Temperature   D. All of These
44. The magnetic field due to a current-carrying wire is given by:  
A.  $\frac{\mu_0 I}{2\pi r}$    B.  $\frac{\mu_0 I}{2r}$    C.  $\frac{\mu_0 I}{\pi r}$    D.  $\frac{\mu_0 I}{r}$
45. The formula for electrical power is:  
A.  $\frac{V^2}{R}$    B.  $I^2 R$    C.  $VI$    D. All of These
46. The principle of superposition applies to:  
A. Waves   B. Particles   C. Charges   D. Magnets
47. The speed of electromagnetic waves in vacuum is:  
A.  $3 \times 10^6$  m/s   B.  $3 \times 10^8$  m/s   C.  $3 \times 10^{10}$  m/s   D.  $3 \times 10^4$  m/s
48. The third law of thermodynamics states that entropy:  
A. Increases with temperature   B. Approaches zero at absolute zero   C. Is constant   D. Is infinite
49. The chromatic aberration in lenses is due to:  
A. Reflection   B. Dispersion   C. Interference   D. Diffraction
50. The unit of angular velocity is:  
A. rad/s   B. m/s   C. rad/s<sup>2</sup>   D. m/s<sup>2</sup>

## Chemistry (25 MCQs)

51. The chemical symbol for potassium is:  
A. P   B. K   C. Pt   D. Po
52. The number of protons in  $\text{Mg}^{2+}$  ion is:  
A. 10   B. 12   C. 14   D. 24
53. The number of electrons in  $\text{F}^-$  ion is:  
A. 8   B. 9   C. 10   D. 11
54. The bond in  $\text{NH}_4^+$  ion is:  
A. Ionic   B. Covalent   C. Coordinate   D. Metallic
55. The structural formula of ethanol is:  
A.  $\text{CH}_3\text{OH}$    B.  $\text{C}_2\text{H}_5\text{OH}$    C.  $\text{C}_6\text{H}_5\text{OH}$    D.  $\text{CH}_3\text{COOH}$
56. The structural formula of methanol is:  
A.  $\text{CH}_3\text{OH}$    B.  $\text{C}_2\text{H}_5\text{OH}$    C.  $\text{CH}_3\text{CHO}$    D.  $\text{CH}_3\text{COOH}$
57. The structural formula of phenol is:  
A.  $\text{C}_6\text{H}_5\text{OH}$    B.  $\text{C}_6\text{H}_6$    C.  $\text{C}_6\text{H}_5\text{CH}_3$    D.  $\text{C}_6\text{H}_5\text{COOH}$

58. Which of the following is a strong acid?  
A.  $\text{CH}_3\text{COOH}$  B.  $\text{HNO}_3$  C.  $\text{H}_2\text{CO}_3$  D.  $\text{HF}$
59. The conjugate base of  $\text{H}_2\text{SO}_4$  is:  
A.  $\text{SO}_4^{2-}$  B.  $\text{HSO}_4^-$  C.  $\text{H}_3\text{SO}_4^+$  D.  $\text{OH}^-$
60. The product of oxidation of methanol with  $\text{K}_2\text{Cr}_2\text{O}_7$  is:  
A. Methanal B. Methanoic acid C. Methane D. Methanol
61. The bond type in  $\text{NaCl}$  is:  
A. Covalent B. Ionic C. Coordinate D. Metallic
62. The number of neutrons in  $\text{C}^{12}$  is:  
A. 6 B. 7 C. 8 D. 12
63. Which acid is classified as weak?  
A.  $\text{HCl}$  B.  $\text{H}_2\text{SO}_4$  C.  $\text{CH}_3\text{COOH}$  D.  $\text{HNO}_3$
64. The functional group in phenol is:  
A.  $-\text{OH}$  (alcoholic) B.  $-\text{OH}$  (phenolic) C.  $-\text{COOH}$  D.  $-\text{CHO}$
65. The number of moles in 32 g of  $\text{O}_2$  is:  
A. 0.5 B. 1 C. 2 D. 4
66. The hybridization of carbon in ethanol ( $\text{C}_2\text{H}_5\text{OH}$ ) at the carbon attached to  $\text{OH}$  is:  
A.  $\text{sp}^3$  B.  $\text{sp}^2$  C.  $\text{sp}$  D.  $\text{sp}^3\text{d}$
67. The catalyst used in the manufacture of sulfuric acid is:  
A. Iron B. Vanadium pentoxide C. Nickel D. Platinum
68. The first ionization energy of elements in a period:  
A. Decreases B. Increases C. Remains constant D. Varies randomly
69. The shape of  $\text{CO}_2$  molecule is:  
A. Linear B. Bent C. Trigonal planar D. Tetrahedral
70. The standard enthalpy of formation is defined at:  
A. 0 K B. 298 K C. 373 K D. 100 K
71. The molecular formula of propanol is:  
A.  $\text{C}_3\text{H}_7\text{OH}$  B.  $\text{C}_3\text{H}_6\text{OH}$  C.  $\text{C}_2\text{H}_5\text{OH}$  D.  $\text{C}_4\text{H}_9\text{OH}$
72. The SI unit of molality is:  
A.  $\text{mol/L}$  B.  $\text{mol/kg}$  C.  $\text{g/L}$  D.  $\text{g/mol}$
73. The ore of aluminum is:  
A. Bauxite B. Hematite C. Sphalerite D. Malachite
74. The boiling point of a liquid increases with:  
A. Decrease in pressure B. Increase in pressure C. Decrease in temperature D. Increase in volume
75. The reaction of ethanol with acetic acid produces:  
A. Ethyl acetate B. Ethanal C. Ethene D. Ether

### English (25 MCQs)

76. Synonym of "diligent" is:  
A. Lazy B. Hardworking C. Careless D. Slow
77. Convert to indirect speech: He said, "I am studying now."  
A. He said he was studying then. B. He said he is studying now. C. He said he studied then.  
D. He said he will study now.
78. The correct preposition in "She is interested *learning*" is: A. at B. in C. on D. with

79. Antonym of “vague” is:  
A. Unclear B. Precise C. Ambiguous D. Obscure
80. Choose the correct sentence:  
A. They doesn’t play football. B. They don’t play football. C. They doesn’t plays football. D. They don’t plays football.
81. Synonym of “authentic” is:  
A. Fake B. Genuine C. Copied D. False
82. The correct spelling is:  
A. Seperate B. Separate C. Separete D. Seperete
83. Fill in the blank: “*sunrises in the east.*” A. A B. An C. The D. None
84. The passive voice of “She writes a letter” is:  
A. A letter is written by her. B. A letter was written by her. C. A letter is being written by her. D. A letter has been written by her.
85. Antonym of “expand” is:  
A. Grow B. Shrink C. Increase D. Extend
86. Choose the correct word: “Their house is *than ours.*” A. bigger B. big C. more big D. biggest
87. Synonym of “tranquil” is:  
A. Restless B. Peaceful C. Noisy D. Chaotic
88. The correct form of the verb in “If she *here, we would celebrate*” is: A. is B. was C. were D. be
89. The plural of “child” is:  
A. Childs B. Children C. Childes D. Child
90. Choose the correct sentence:  
A. Me and him are going. B. He and I are going. C. I and he are going. D. Him and me are going.

### Sentence Correction (Questions 91–95):

Choose the option that corrects the underlined error.

91. She like to dance.  
A. likes B. liking C. liked D. No error
92. This is most expensive than that.  
A. more expensive B. expensiver C. expensive D. No error
93. He have two cats.  
A. has B. had C. having D. No error
94. The boys is running fast.  
A. are B. was C. be D. No error
95. I saw the movie tomorrow.  
A. see B. will see C. seeing D. No error
96. Synonym of “cautious” is:  
A. Reckless B. Careful C. Bold D. Hasty
97. The correct preposition in “He is afraid *heights*” is: A. of B. in C. at D. with
98. Antonym of “abundant” is:  
A. Plentiful B. Scarce C. Rich D. Full
99. Choose the correct sentence:  
A. We has finished our work. B. We have finished our work. C. We having finished our work. D. We has finish our work.
100. The phrasal verb “turn down” means:  
A. To accept B. To reject C. To increase D. To continue