

KEAM 2025

Question Paper Code: 8/2025/OL

Exam:KEAM 2025 ENGG-1

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1. Let A, B, C be any three finite sets.
If $n(A \times B) = 160$, $n(B \times C) = 80$ and $n(C \times A) = 200$, then $n(A) =$
- A) 10
 - B) 18
 - C) 16
 - D) 12
 - E) 20

Correct Answer : Option E

2. Let $f(x) = x^2 - 10x - 19$, $x \in \mathbb{R}$. Then the inverse image of 5, $f^{-1}(5) =$
- A) $\{-2, -12\}$
 - B) $\{-2, 12\}$
 - C) $\{2, -12\}$
 - D) $\{2, 12\}$
 - E) ϕ

Correct Answer : Option B

3. Let $f(x) = \cos x$. Then the value of $\frac{1}{2}[f(x+y) + f(y-x)] - f(x)f(y)$ is equal to
- A) 2
 - B) -2
 - C) 1
 - D) -1
 - E) 0

Correct Answer : Option E

4. Let $f(x) = \log_5 x (x > 0)$ and $g(x) = \cos^{-1} x (-1 \leq x \leq 1)$. Then the domain of $g \circ f$ is
- A) $(0, 1]$
 - B) $[-1, \alpha)$
 - C) $[0, \alpha)$
 - D) $\left[\frac{1}{5}, 5\right]$
 - E) $[-1, 5]$

Correct Answer : Option D

5. Let $z = 1 + \frac{1}{i}$. Then the value of z^4 is equal to
- A) 4
 - B) -4
 - C) $1 - i$
 - D) $1 + i$
 - E) i

Correct Answer : Option B

6. The modulus of the complex number $(2\sqrt{2} + i2\sqrt{2})^2$ is equal to
- A) 64
 - B) 4
 - C) 32
 - D) 8
 - E) 16

Correct Answer : Option E

7. If $z + \bar{z} = 6$ and $z - \bar{z} = 4i$, then $|z|^2 =$
- A) 36
 - B) 16
 - C) 15
 - D) 13
 - E) 9

Correct Answer : Option D

8. Let $z = \frac{2-i}{\alpha+i}$, where α is a real number. If $4\text{Re}(z) = 3\text{Im}(\bar{z})$ then the value of α is
- A) 5
 - B) -5
 - C) 3
 - D) 2
 - E) -2

Correct Answer : Option D

9. In a G.P., the first and third terms are 4 and 8 respectively. Then the 21^{st} term is
- A) 4012
 - B) 4064
 - C) 4098

- D) 2048
- E) 4096

Correct Answer : Option E

- 10.** Let a_1, a_2, a_3, \dots be in G.P. If $a_1 \cdot a_2 \cdot a_3 = 64$ and $a_1 \cdot a_2 \cdot a_3 \cdot a_4 \cdot a_5 = 32$, then common ratio is
- A) $\frac{1}{3}$
 - B) $\frac{1}{8}$
 - C) $\frac{1}{6}$
 - D) $\frac{1}{2}$
 - E) $\frac{1}{4}$

Correct Answer : Option D

- 11.** The general term of a sequence is $t_n = \frac{n(n+6)}{n+4}$, $n = 1, 2, 3, \dots$. If $t_n = 5$, then the value of n is
- A) 2
 - B) 3
 - C) 4
 - D) 5
 - E) 6

Correct Answer : Option C

- 12.** The product of first 5 terms of a G.P., whose terms are increasing, is 32. The third term of the G.P. is
- A) 2
 - B) $\frac{1}{2}$
 - C) 4
 - D) $\frac{1}{8}$
 - E) 8

Correct Answer : Option A

- 13.** Let $\alpha = \sum_{k=0}^5 {}^{10}C_{2k}$ and $\beta = \sum_{k=0}^4 {}^{10}C_{2k+1}$. Then $\alpha - \beta$ is equal to
- A) 32
 - B) 64

- C) 128
- D) 256
- E) 0

Correct Answer : Option E

14. If $\alpha = {}^n C_r$ and $\beta = {}^n C_{r-1}$, then $1 + \frac{\alpha}{\beta}$ is equal to

- A) $\frac{n+1}{r-1}$
- B) $\frac{n+1}{r}$
- C) $\frac{n-1}{1}$
- D) $\frac{n-r+1}{r}$
- E) $\frac{n+1}{r+1}$

Correct Answer : Option B

15. If ${}^{11}P_r = 7920$, then the value of r is equal to

- A) 7
- B) 6
- C) 5
- D) 4
- E) 3

Correct Answer : Option D

16. In the binomial expansion of $(2x + \alpha)^8$, the co-efficients of x^2 and x^3 are equal. Then the value of α is equal to

- A) 2
- B) $\frac{1}{4}$
- C) 4
- D) $\frac{1}{2}$
- E) 3

Correct Answer : Option C

17. Let $A = \{0, 2, 4, 6, 8\}$. The number of 5-digit numbers that can be formed using the digits in A without replacement, is

- A) 120
- B) 96
- C) 88
- D) 64

E) 32

Correct Answer : Option B

18. Let A be a 3×3 matrix and let $B=3A$. If $|A|=5$, then the value of $\frac{|\text{adj } B|}{|3A|}$ is equal to

- A) 27
- B) 125
- C) 25
- D) 135
- E) 81

Correct Answer : Option D

19. If $\begin{pmatrix} -1 & 2 \\ 3 & -4 \\ -5 & 6 \end{pmatrix} \begin{pmatrix} 7 \\ 8 \end{pmatrix} = \begin{pmatrix} \alpha \\ \beta \\ 13 \end{pmatrix}$, then the value of $\alpha + \beta$ is equal to

- A) -18
- B) 18
- C) 21
- D) -21
- E) -2

Correct Answer : Option E

20. If the matrix $\begin{bmatrix} 8-k & 2 \\ -2 & 4-k \end{bmatrix}$ is singular, then the value of k is equal to

- A) 6
- B) 5
- C) 4
- D) 3
- E) 2

Correct Answer : Option A

The following system of equations

21.
$$\begin{aligned} x + y + z &= 1 \\ 2x + 3y - mz &= 2 \\ 3x + 5y + 3z &= 3 \end{aligned}$$
 has no unique solution. Then the value of m is equal to

- A) 3
- B) 5
- C) 2
- D) -2
- E) -3

Correct Answer : Option D

22. The set of all x satisfying the inequalities $-4 \leq 2 - 3x < 7$ is

- A) $\left(2, \frac{5}{3}\right)$
- B) $\left[2, \frac{5}{3}\right)$
- C) $\left[\frac{-11}{3}, 2\right]$
- D) $\left(\frac{-5}{3}, 2\right]$
- E) $\left[\frac{-7}{3}, 2\right)$

Correct Answer : Option D

23. $-5 < x \leq -1$ implies $-21 < 5x + 4 \leq b$, the least value of b is

- A) 5
- B) -5
- C) -4
- D) 4
- E) -1

Correct Answer : Option E

24. $\tan 15^\circ + \tan 75^\circ =$

- A) $\sqrt{5} + 1$
- B) 2
- C) $\sqrt{7} - 1$
- D) 4
- E) 0

Correct Answer : Option D

25. If $x + z = 2y$ and $y = \frac{\pi}{4}$, then $\tan x \tan y \tan z =$

- A) 1
- B) $\tan(x - y)$
- C) $\tan(z - y)$
- D) $\frac{1}{2}$
- E) 0

Correct Answer : Option A

26. If $\sin x + \sin y = a$, $\cos x + \cos y = b$ and $x + y = \frac{2\pi}{3}$, then the value of $\frac{a}{b}$ is equal to
- A) $\frac{\sqrt{3}}{3}$
 - B) $2\sqrt{3}$
 - C) $\sqrt{3}$
 - D) $4\sqrt{3}$
 - E) $\frac{\sqrt{3}}{6}$

Correct Answer : Option C

27. If $\sin \alpha = \frac{12}{13}$, where $\frac{\pi}{2} < \alpha < \frac{3\pi}{2}$ then the value of $\tan \alpha$ is equal to
- A) $\frac{5}{12}$
 - B) $\frac{13}{5}$
 - C) $\frac{-12}{5}$
 - D) $\frac{-13}{5}$
 - E) $\frac{-1}{12}$

Correct Answer : Option C

28. If $f(x) = \tan^{-1}\left(\frac{2x}{1-x^2}\right)$, then $f\left(\frac{1}{\sqrt{3}}\right)$ is equal to
- A) $\frac{\pi}{6}$
 - B) $\frac{2\pi}{3}$
 - C) $\frac{\pi}{3}$
 - D) $\frac{4\pi}{3}$
 - E) 0

Correct Answer : Option C

29. if $5 \sin^{-1} \alpha + 3 \cos^{-1} \alpha = \pi$, then α is equal to
- A) $\frac{1}{\sqrt{2}}$
 - B) 1
 - C) $\frac{-1}{\sqrt{2}}$
 - D) -1

E) 0

Correct Answer : Option C

30. If $\theta = \cot^{-1} \sqrt{\frac{1-x}{1+x}}$, then $\sec^2 \theta$

- A) $\frac{1+x}{2}$
- B) $\frac{1-x}{2}$
- C) $\frac{2}{1-x}$
- D) x
- E) $2x$

Correct Answer : Option C

31. The straight line $ax + by + c = 0$ passes through the point $(-10, 7)$. If the line is perpendicular to $11x - 7y = 13$, then the value of c is equal to

- A) 8
- B) -7
- C) 13
- D) -13
- E) 5

Correct Answer:-Question Cancelled

32. Let ABC be an equilateral triangle. If the coordinates of A are $(-2, 2)$ and the side BC is along the line $x + y = 6$, then the length of the side of the triangle is

- A) $2\sqrt{3}$
- B) $3\sqrt{2}$
- C) $4\sqrt{6}$
- D) $6\sqrt{6}$
- E) $2\sqrt{6}$

Correct Answer : Option E

33. The focus of the parabola $x^2 - 4x + 8y + 4 = 0$ is

- A) $(-2, -2)$
- B) $(1, 1)$
- C) $(2, 1)$
- D) $(2, -2)$
- E) $(1, 2)$

Correct Answer : Option D

34. A circle touches the x - axis at $(9, 0)$. If it also touches the straight line $y = 14$, then the equation of the circle is
- A) $(x - 9)^2 + (y - 7)^2 = 49$
 - B) $x^2 + (y - 7)^2 = 49$
 - C) $(x - 9)^2 + y^2 = 49$
 - D) $(x - 9)^2 + (y - 7)^2 = 81$
 - E) $(x - 7)^2 + (y - 9)^2 = 49$

Correct Answer : Option A

35. The length of major axis and minor axis of an ellipse are, respectively, m and n . If $m^2 - n^2 = 45$ and the eccentricity of the ellipse is $\frac{\sqrt{5}}{3}$, then the length of the major axis is
- A) 13
 - B) 6
 - C) 12
 - D) 18
 - E) 9

Correct Answer : Option E

36. The vertex of the parabola $4y = x^2 - 6x + 17$ is
- A) $(3, 2)$
 - B) $(4, 3)$
 - C) $(4, 2)$
 - D) $(3, 7)$
 - E) $(7, 2)$

Correct Answer : Option A

37. The eccentricity of the hyperbola $\frac{(2x-6)^2}{2} - \frac{(4y+7)^2}{16} = 1$ is
- A) $\sqrt{5}$
 - B) $\frac{\sqrt{5}}{2}$
 - C) $\sqrt{3}$
 - D) $\sqrt{10}$
 - E) $\frac{\sqrt{3}}{2}$

Correct Answer : Option C

38. Let $\vec{a} + \vec{b} = \lambda \hat{i} + 16\hat{j} - 18\hat{k}$ and $\vec{a} - \vec{b} = 2\hat{i} + 8\hat{j} + \lambda \hat{k}$. If $\vec{a} + \vec{b}$ is perpendicular to $\vec{a} - \vec{b}$, then $|\vec{a}| =$
- A) $5\sqrt{13}$
 B) $\sqrt{174}$
 C) $\sqrt{184}$
 D) $13\sqrt{5}$
 E) $\sqrt{194}$

Correct Answer : Option E

39. If $|\vec{a}| = 12$ and the projection of \vec{a} on \vec{b} is $6\sqrt{3}$, then the angle between \vec{a} and \vec{b} is
- A) $\frac{\pi}{2}$
 B) $\frac{\pi}{6}$
 C) $\frac{\pi}{3}$
 D) $\frac{2\pi}{3}$
 E) $\frac{3\pi}{4}$

Correct Answer : Option B

40. Let $\vec{a} = 6\hat{i} + 2\hat{j} + 3\hat{k}$. If \vec{b} is parallel to \vec{a} and $\vec{a} \cdot \vec{b} = \frac{49}{2}$, then $|\vec{b}| =$
- A) 49
 B) 7
 C) 14
 D) $7\sqrt{2}$
 E) $\frac{7}{2}$

Correct Answer : Option E

41. If $|\vec{a} + \vec{b}| = \frac{\sqrt{14}}{2}$ where \vec{a} and \vec{b} are unit vectors, then the value of $|\vec{a} + \vec{b}|^2 - |\vec{a} - \vec{b}|^2$ is equal to
- A) 3
 B) 4
 C) $\sqrt{5}$
 D) $\sqrt{7}$
 E) 7

Correct Answer : Option A

Let α , β and γ be the angles made by a straight line with the x-axis, y-axis and z-axis respectively. If $\cos \alpha + \cos \beta + \cos \gamma = \frac{5}{3}$, then the value of $\cos \alpha \cos \beta + \cos \beta \cos \gamma + \cos \gamma \cos \alpha$ is equal to

- A) $\frac{11}{3}$
- B) $\frac{8}{9}$
- C) $\frac{11}{9}$
- D) $\frac{7}{3}$
- E) $\frac{7}{9}$

Correct Answer : Option B

43. A straight line passing through (6,1,3) meets the line $\frac{x-1}{2} = \frac{y}{1} = \frac{z-2}{3}$ at Q. If the lines are perpendicular to each other, then the coordinates of Q are

- A) (2,1,3)
- B) (1,2,3)
- C) (3,1,5)
- D) (2,-1,3)
- E) (-1,2,3)

Correct Answer : Option C

44. The angle between the lines $\frac{x-3}{1} = \frac{y+1}{-1} = \frac{z-2}{-1}$ and $\frac{x+1}{2} = \frac{y-2}{2} = \frac{z+3}{-2}$ is

- A) $\cos^{-1}\left(\frac{\sqrt{2}}{6}\right)$
- B) $\cos^{-1}\left(\frac{\sqrt{6}}{6}\right)$
- C) $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$
- D) $\cos^{-1}\left(\frac{1}{3}\right)$
- E) $\cos^{-1}\left(\frac{\sqrt{2}}{3}\right)$

Correct Answer : Option D

45. A straight line passes through the points (10,8, 6) and (13,9, 4) . A unit vector parallel to this line is

- A) $\frac{1}{\sqrt{17}}(3\hat{i} + 2\hat{j} + 2\hat{k})$
- B) $\frac{1}{\sqrt{6}}(\hat{i} + \hat{j} - 2\hat{k})$
- C) $\frac{1}{\sqrt{14}}(3\hat{i} + \hat{j} + 2\hat{k})$
- D) $\frac{1}{\sqrt{17}}(3\hat{i} + \hat{j} + 2\hat{k})$
- E) $\frac{1}{\sqrt{14}}(3\hat{i} + \hat{j} - 2\hat{k})$

Correct Answer : Option E

- 46.** A box contains 4 red and 6 white marbles. Two successive draws of 3 balls are made without replacement. The probability that in the first draw, all the 3 balls are white and in the second draw, all the 3 balls are red, is

- A) $\frac{2}{105}$
- B) $\frac{1}{70}$
- C) $\frac{4}{105}$
- D) $\frac{1}{105}$
- E) $\frac{1}{35}$

Correct Answer : Option A

- 47.** Let A and B be two events. If $P(A | B) = 0.4$, $P(A | B') = 0.7$ and $P(B) = 0.7$, then $P(A) =$

- A) 0.44
- B) 0.54
- C) 0.49
- D) 0.5
- E) 0.65

Correct Answer : Option C

- 48.** The standard deviation of the numbers -3, 0, 3, 8 is

- A) $\frac{\sqrt{60}}{2}$
- B) $\frac{\sqrt{62}}{2}$
- C) $\frac{\sqrt{65}}{2}$
- D) $\frac{\sqrt{66}}{2}$

E) $\frac{\sqrt{67}}{2}$

Correct Answer : Option D

49. An unbiased die is tossed until 5 appears. If X denotes the number of tosses required, then $\frac{P(X=2)}{P(X=5)} =$

A) $\frac{25}{36}$

B) $\frac{125}{216}$

C) $\frac{216}{125}$

D) $\frac{36}{25}$

E) $\frac{216}{25}$

Correct Answer : Option C

50. $\lim_{x \rightarrow 0} \frac{x^2}{\sqrt{2} - \sqrt{1 + \cos x}}$ is equal to

A) $4\sqrt{2}$

B) 4

C) $2\sqrt{2}$

D) $\sqrt{2}$

E) 0

Correct Answer : Option A

51. Let $f(x) = \begin{cases} \frac{\tan \alpha x + (\beta + 1) \tan x}{x}, & \text{for } x \neq 0 \\ 5, & \text{for } x = 0 \end{cases}$ be continuous at $x = 0$. Then the value of $\alpha + \beta$ is equal to

A) 2

B) 3

C) 4

D) 5

E) 6

Correct Answer : Option C

52. The domain of the function $f(x) = \sqrt{x-3} + 4\sqrt{5-x}$ is

A) [1,2]

B) [2,4]

C) [3,5]

- D) [3,20]
- E) [12,20]

Correct Answer : Option C

53. If $f(x) = \frac{3^x}{3^x + \sqrt{3}}$, then $f(x) + f(1 - x)$ is equal to

- A) $\sqrt{3}$
- B) $\frac{1}{\sqrt{3}}$
- C) $2\sqrt{3}$
- D) 1
- E) 0

Correct Answer : Option D

54. $\lim_{x \rightarrow 0} \frac{\sqrt{\cos^2 x + 3} - \sqrt{\cos^2 x + \sin x + 3}}{x} =$

- A) $\frac{1}{4}$
- B) $\frac{-1}{4}$
- C) $\frac{1}{2}$
- D) $\frac{-1}{2}$
- E) -1

Correct Answer : Option B

55. If $f(x) = |x^2 + x - 6|$ is not differentiable at $x = a$ and $x = b$, then $a^2 + b^2 =$

- A) 11
- B) 14
- C) 12
- D) 13
- E) 16

Correct Answer : Option D

56. Let $f(x) = |\sin 3x| - |\cos 3x|$, where $\frac{\pi}{6} \leq x \leq \frac{\pi}{3}$. Then the value of $f'\left(\frac{\pi}{4}\right)$ is equal to

- A) $-3\sqrt{2}$
- B) $3\sqrt{2}$
- C) $\frac{-3}{\sqrt{2}}$
- D) $\frac{3}{\sqrt{2}}$

E) 0

Correct Answer : Option A

57. Let $h(x) = f(\sqrt{g(x)})$. If $f'(3) = 6$, $g'(3) = 3$ and $g(3) = 9$, then the value of $h'(3)$ is equal to

- A) 1
- B) 3
- C) 6
- D) 9
- E) 18

Correct Answer : Option B

58. Let $f(x) = (\cos^2 x)(a + \cos x)$. If $f'\left(\frac{\pi}{3}\right) = 0$ then the value of a is equal to

- A) $\frac{\sqrt{3}}{2}$
- B) $\frac{3}{4}$
- C) $\frac{-3}{4}$
- D) $\frac{-3}{2}$
- E) -1

Correct Answer : Option C

59. If $y = \tan^{-1}(x^2 - x)$, then $\frac{dy}{dx} =$

- A) $\frac{2x}{1 + (x^2 - x)^2}$
- B) $\frac{2x - 1}{1 + (x^2 - x)^2}$
- C) $\frac{2x - 1}{1 - (x^2 - x)^2}$
- D) $\frac{-2x + 1}{1 + (x^2 - x)^2}$
- E) $(2x - 1)(1 + (x^2 - x)^2)$

Correct Answer : Option B

60. The function $f(x) = x^2(x - 2)$ is strictly decreasing in

- A) (1,2)
- B) (-1,1)
- C) $\left(\frac{4}{3}, \infty\right)$

D) $(-1,0)$

E) $\left(0, \frac{4}{3}\right)$

Correct Answer : Option E

61. The surface area of a solid hemisphere is increasing at the rate of $8 \text{ cm}^2 / \text{sec}$ (retaining its shape). Then the rate of change of its volume (in cm^3 / sec), when the radius is 5 cm , is

A) $\frac{50}{3}$

B) $\frac{20}{3}$

C) $\frac{40}{3}$

D) $\frac{25}{3}$

E) $\frac{80}{3}$

Correct Answer : Option C

62. The function $f(x) = 2x^3 - 3x^2 - 36x + 28$ is increasing in

A) $(-\infty, -1] \cup [3, \infty)$

B) $(-\infty, -2] \cup [3, \infty)$

C) $(-\infty, -2] \cup [5, \infty)$

D) $(-\infty, -5] \cup [3, \infty)$

E) $(-\infty, -2] \cup [8, \infty)$

Correct Answer : Option B

63. Let $f(x) = x^2 + \alpha x + \beta$. If f has a local minimum at $(2, 6)$, then $f(0)$ is equal to

A) 10

B) -6

C) 8

D) -8

E) 6

Correct Answer : Option A

64. $\int \frac{2x^2 + 4x + 3}{x^2 + x + 1} dx =$

A) $2 \log_e |x^2 + x + 1| + C$

B) $2x \log_e |x^2 + x + 1| + C$

C) $\frac{1}{2} \log_e |x^2 + x + 1| + C$

D) $2x + \log_e |x^2 + x + 1| + C$

E) $x + 2\log_e |x^2 + x + 1| + C$

Correct Answer : Option D

65. $\int \frac{\sin^{-1}x}{\sqrt{1-x^2}} dx =$

A) $\frac{1}{2}(\sin^{-1}x)^2 + C$

B) $-(\sin^{-1}x)\sqrt{1-x^2} + C$

C) $(\sin^{-1}x)\sqrt{1-x^2} + x + C$

D) $(\sin^{-1}x)\sqrt{1-x^2} - x + C$

E) $(\sin^{-1}x)^2 + C$

Correct Answer : Option A

66. $\int x^7(x^8 + 1)^{-3/4} dx =$

A) $\frac{1}{2}\left(1 + \frac{1}{x^8}\right)^{1/4} + C$

B) $4\left(1 + \frac{1}{x^8}\right)^{1/4} + C$

C) $(x^8 + 1)^{1/4} + C$

D) $4(x^8 + 1)^{1/4} + C$

E) $\frac{1}{2}(x^8 + 1)^{1/4} + C$

Correct Answer : Option E

67. $\int e^x \sec x(1 + \tan x) dx$

A) $e^x \sec^2 x + C$

B) $e^x \tan x + C$

C) $e^x \sec x + C$

D) $e^x \tan^2 x + C$

E) $e^x \sec x \tan x + C$

Correct Answer : Option C

68. $\int e^x(x^2 - 2)\cos(e^x(x^2 - 2x)) dx =$

A) $\sin(e^x(x^2 - 2x)) + C$

B) $\sin(e^x(x^2 - 2)) + C$

- c) $x^2 e^x \sin(e^x(x^2 - 2)) + C$
 d) $e^x \sin(e^x(x^2 - 2)) + C$
 e) $e^x \sin(x^2 e^x - 2x e^x) + C$

Correct Answer : Option A

If

69.

$$\int_{-\sqrt{3}}^1 (-6x^2 + 18) dx = \alpha + \beta \sqrt{3}$$

then the value of $\alpha +$

β is equal to

- A) 12
 B) 18
 C) 24
 D) 28
 E) 32

Correct Answer : Option D

The value of

70.

$$\int_{\pi/10}^{2\pi/5} \frac{\cot^3 x}{1 + \cot^3 x} dx$$

is equal

to

- A) $\frac{\pi}{20}$
 B) $\frac{\pi}{10}$
 C) $\frac{3\pi}{20}$
 D) $\frac{\pi}{5}$
 E) $\frac{\pi}{4}$

Correct Answer : Option C

71. The area of the region bounded by $y = x^{5/2}$ and $y = x$ (in square units) is

- A) $\frac{3}{7}$
 B) $\frac{2}{7}$
 C) $\frac{3}{14}$

- D) $\frac{5}{14}$
- E) $\frac{4}{7}$

Correct Answer : Option C

72. $\int_0^1 \frac{3^{2x}}{3^{2x} + 1} dx =$

- A) $\frac{\log_e 5}{2 \log_e 3}$
- B) $\frac{\log_e 5}{9 \log_e 3}$
- C) $\frac{\log_e 5}{3 \log_e 3}$
- D) $\frac{2 \log_e 5}{3 \log_e 3}$
- E) $\frac{2 \log_e 5}{9 \log_e 3}$

Correct Answer : Option A

73. If $y(x) = 2y'(x)$, $y(x) \geq 0$ and $y(0) = e^2$ then $y(x) =$

- A) $e^{x/2} + 2$
- B) e^{2x}
- C) $e^{x/2}$
- D) $e^2 e^{x/2}$
- E) $e^{2x} + 2$

Correct Answer : Option D

74. The integrating factor of the differential equation $\sin x \, dy = \frac{1}{2}(\sin 2x + 2y \cos x) dx$ is

- A) $\sec x$
- B) $\sin x$
- C) $\tan x$
- D) $\cos x$
- E) $\operatorname{cosec} x$

Correct Answer : Option E

75. In the graphical method of a linear programming problem, the optimal solution lies

- A) at the centre of the feasible region
- B) at a corner point of the feasible region

- C) at a point on the x-axis
- D) at the origin
- E) at the point where the objective function is zero

Correct Answer : Option B

- 76.** If 2.7×10^{-6} is added to 4.3×10^{-5} , giving due regard to significant figures, the result will be
- A) 4.57×10^{-5}
 - B) 4.6×10^{-5}
 - C) 4.5×10^{-5}
 - D) 7.0×10^{-5}
 - E) 4.57×10^{-6}

Correct Answer : Option B

- 77.** $[L^0 M^0 T^{-1}]$ is the dimensional formula for
- A) angular velocity
 - B) activity of radioactive substance
 - C) time period of oscillation
 - D) half life period of a radioactive substance
 - E) impulse of the force

Correct Answer:-Question Cancelled

- 78.** If the velocity (in ms^{-1}) of a particle at any instant t is given by $2.0\hat{i} + 3.0t\hat{j}$ then the magnitude of its acceleration (in ms^{-2}) is
- A) 5
 - B) 3
 - C) 2
 - D) 4
 - E) 6

Correct Answer : Option B

- 79.** Among the following pairs of vectors, if the resultant of two vectors can never have magnitude 4 units, then the magnitudes of the vectors are
- A) 2 units and 2 units
 - B) 1 unit and 3 units
 - C) 5 units and 1 unit
 - D) 7 units and 2 units
 - E) 5 units and 8 units

Correct Answer : Option D

- 80.** The ratio of angular speeds of the minute hand and second hand of a watch is

- A) 1 : 12
- B) 1 : 6
- C) 1 : 60
- D) 12 : 1
- E) 60 : 1

Correct Answer : Option C

- 81.** When a body is thrown vertically upwards, from the ground, the time of ascent is t_1 and the time of descent is t_2 in the absence of air resistance. Then t_1 is equal to
- A) $2t_s$
 - B) $0.5t_2$
 - C) $0.25t_2$
 - D) t_2
 - E) $4t_2$

Correct Answer : Option D

- 82.** When a person of mass m climbs up or down a rope with uniform speed v , the tension in the rope is (g = acceleration due to gravity)
- A) mg
 - B) $m(g + v)$
 - C) $m(g - v)$
 - D) mgv
 - E) $m\left(\frac{g}{v}\right)$

Correct Answer : Option A

- 83.** A body of mass 0.2 kg travels along a straight line path with velocity $v = (2x^2 + 2)m s^{-1}$. The net work done by the driving force during its displacement from $x = 0$ to $x = 2m$ is
- A) 5.4 J
 - B) 4.8 J
 - C) 9.6 J
 - D) 10.8 J
 - E) 6.5 J

Correct Answer : Option C

- 84.** Two colliding particles after collision move together. Then the collision is
- A) partial elastic collision
 - B) perfectly inelastic collision
 - C) perfectly elastic collision
 - D) partial inelastic collision

- E) collision without any transfer of energy

Correct Answer : Option B

85. A solid cylinder, a solid sphere, a disc and a ring are released from the top of an inclined plane (frictionless) so that they slide down the plane without rolling. The maximum acceleration down the plane is

- A) for the disc
- B) for the solid cylinder
- C) for the solid sphere
- D) for the ring
- E) the same for all

Correct Answer : Option E

86. When a particle is rotating with constant angular momentum, then

- A) torque acting on it is constant
- B) force acting on it is constant
- C) linear momentum is constant
- D) torque acting on it is zero
- E) linear velocity is constant

Correct Answer : Option D

87. Two objects of masses 1 kg and 2 kg are moving towards each other with accelerations 2 ms^{-2} and 3 ms^{-2} respectively on a smooth horizontal surface. The acceleration of centre of mass of the system is

- A) $\left(\frac{4}{3}\right) \text{ms}^{-2}$ in in the direction of acceleration of 2 kg mass
- B) $\left(\frac{2}{3}\right) \text{ms}^{-2}$ in in the direction of acceleration of 1 kg mass
- C) $\left(\frac{2}{3}\right) \text{ms}^{-2}$ in in the direction of acceleration of 2 kg mass
- D) $\left(\frac{4}{3}\right) \text{ms}^{-2}$ in in the direction of acceleration of 1 kg mass
- E) zero

Correct Answer : Option A

88. There is a mine of depth about 3.0 km. Conditions prevailing in this mine as compared to those at the surface of earth are

- A) higher air pressure, lower acceleration due to gravity
- B) higher air pressure, higher acceleration due to gravity
- C) lower air pressure, higher acceleration due to gravity
- D) lower air pressure, lower acceleration due to gravity
- E) same air pressure and acceleration due to gravity

Correct Answer : Option A

89. The period of revolution of the planet A around the sun is 27 times that of another planet B . If the distance of A from the sun is X times greater than that of B from the sun, then the value of X is
- A) 8
 - B) 4
 - C) 9
 - D) 3
 - E) 12

Correct Answer : Option C

90. The work done in splitting a spherical liquid drop of radius ' a ' into eight liquid droplets of the same size is (surface tension of the liquid = S)
- A) $8\pi Sa^2$
 - B) πSa^2
 - C) $2\pi Sa^2$
 - D) $4\pi Sa^2$
 - E) $16\pi Sa^2$

Correct Answer : Option D

91. A vessel containing a liquid of density d moves down with an acceleration a ($a < g$). The pressure due to the liquid at a depth of h below the free surface of the liquid is
- A) hgd
 - B) $h(g - a)d$
 - C) $h(g + a)d$
 - D) $h\left(\frac{g}{a}\right)d$
 - E) $h\left(\frac{a}{g}\right)d$

Correct Answer : Option B

92. An incompressible liquid flows through a horizontal pipe having cross-sectional areas A at one end and $2A$ at the other end. If the pressure and velocity of the liquid at the lower cross-sectional end are P and v , then those values at the other end are (density of the liquid = ρ)
- A) $\frac{v}{2}, P + \frac{3}{8} \rho v^2$
 - B) $v, P + \frac{1}{8} \rho v^2$
 - C) $\frac{v}{4}, P + \frac{1}{4} \rho v^2$

- D) $v, P + \frac{1}{2} \rho v^2$
E) $2P + \rho v^2$

Correct Answer : Option A

93. Efficiency of a Carnot engine

- A) depends on the nature of the working substance
B) does not depend on the nature of the working substance
C) depends only on the temperature of the source T^1
D) depends only on the temperature of the sink T^2
E) does not depend on both temperature of the source T^1 and temperature of the sink T^2

Correct Answer : Option B

94. A cylindrical vessel contains 16 kg of gas at a pressure of 1 atmosphere. A certain amount of gas is taken out and the pressure of gas in the vessel becomes 0.75 atmosphere. The amount of gas taken out is

- A) 2.5 kg
B) 4 kg
C) 7.5 kg
D) 8.25 kg
E) 10 kg

Correct Answer : Option B

95. The number of degrees of freedom for monoatomic gas molecule is

- A) 3
B) 4
C) 5
D) 7
E) 1

Correct Answer : Option A

96. Pick out the INCORRECT STATEMENT

- A) Internal energy of an ideal gas depends only on its temperature
B) Change in the internal energy in a cyclic process is not zero
C) Change in the internal energy of a gas depends only on its initial and final states
D) Internal energy depends upon state of matter
E) Change in the internal energy in a cyclic process is zero

Correct Answer : Option B

97. The distance travelled by a particle executing linear S.H.M. from its mean position in 2s is equal to $\frac{1}{\sqrt{2}}$ times its amplitude. Then its time period in seconds is
- A) 10
 - B) 8
 - C) 9
 - D) 12
 - E) 16

Correct Answer : Option E

98. Time periods of pendulums *A* and *B* are T and $\frac{5T}{2}$. If they start executing S.H.M. at the same time from the mean position, the phase difference between them after the bigger pendulum has completed one oscillation is
- A) $\pi / 4$
 - B) $(\pi / 2)$
 - C) $\pi / 8$
 - D) $\pi / 16$
 - E) π

Correct Answer : Option E

99. string of length l is divided into three segments of lengths l_1, l_2 and l_3 with the fundamental frequencies n_1, n_2 and n_3 respectively. The original fundamental frequency of the string n is given by
- A) $n = n_1 + n_2 + n_3$
 - B) $\frac{1}{n} = \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3}$
 - C) $\sqrt{n} = \sqrt{n_1} + \sqrt{n_2} + \sqrt{n_3}$
 - D) $\frac{1}{\sqrt{n}} = \frac{1}{\sqrt{n_1}} + \frac{1}{\sqrt{n_2}} + \frac{1}{\sqrt{n_3}}$
 - E) $n = n_1 n_2 n_3$

Correct Answer : Option B

100. The inward and outward electric flux from a closed surface are $6 \times 10^4 \text{NM}^2\text{C}^{-1}$ and $3 \times 10^4 \text{NM}^2\text{C}^{-1}$. Then the net charge (in coulomb) inside the closed surface is
- A) $-6 \times 10^4 \epsilon_0$
 - B) $6 \times 10^4 \epsilon_0$
 - C) $3 \times 10^4 \epsilon_0$
 - D) $9 \times 10^4 \epsilon_0$

E) $-3 \times 10^4 \varepsilon_0$

Correct Answer : Option E

101. In a circuit, the capacitance C is connected. The effective capacitance of the circuit can be reduced by

- A) introducing a metal plate between the plates of the capacitor
- B) introducing a dielectric slab between the plates
- C) reducing the potential difference between the plates
- D) connecting another capacitor in series with it
- E) connecting another capacitor in parallel with it

Correct Answer : Option D

102. A given charge Q is divided into two parts which are then kept at a distance ' d ' apart. The electrostatic force between them will be maximum if the two parts are

- A) $\frac{Q}{4}$ and $\frac{3Q}{4}$
- B) $\frac{7Q}{8}$ and $\frac{Q}{8}$
- C) $\frac{Q}{3}$ and $\frac{2Q}{3}$
- D) $\frac{5Q}{6}$ and $\frac{Q}{6}$
- E) $\frac{Q}{2}$ each

Correct Answer : Option E

103. The dependence of drift velocity v_d on the electric field E , for which Ohm's law is obeyed is

- A) $v_d \propto E^2$
- B) $v_d \propto E$
- C) $v_d \propto \sqrt{E}$
- D) $v_d \propto \frac{1}{E}$
- E) $v_d \propto \frac{1}{E^2}$

Correct Answer : Option B

104. If an equilateral triangle is made of a uniform wire of resistance R , then the equivalent resistance between the ends of a side is

- A) $\frac{2R}{3}$
- B) $\frac{R}{3}$

- C) $\frac{R}{9}$
- D) $\frac{2R}{9}$
- E) $\frac{R}{6}$

Correct Answer : Option D

105. When ' n ' identical cells are connected in parallel,

- A) net voltage increases
- B) net current increases
- C) net voltage decreases
- D) net current decreases
- E) total internal resistance increases

Correct Answer : Option B

106. In a cyclotron, if the frequency of the accelerating field is doubled, then the radius of the charged particle moving in a circular path will be

- A) doubled
- B) quadrupled
- C) the same
- D) halved
- E) reduced to one fourth of the original radius

Correct Answer : Option C

107. A galvanometer of resistance 100Ω gives a full scale deflection for a current of 1mA through it. The resistance required to convert it into a voltmeter which can read upto 2V is

- A) 1175Ω
- B) 1200Ω
- C) 1525Ω
- D) 1900Ω
- E) 2025Ω

Correct Answer : Option D

108. If a magnetic material has magnetic susceptibility $\chi = -0.5$, then its relative magnetic permeability μ_r and the type of material is

- A) 0, diamagnetic
- B) 2, ferromagnetic
- C) 1, paramagnetic
- D) -1 , ferromagnetic
- E) 0.5, diamagnetic

Correct Answer : Option E

- 109.** The self-inductance of an air core solenoid is L . If the number of turns in the solenoid is doubled, keeping all other factors constant, then its self-inductance will be
- A) L
 - B) $\frac{L}{2}$
 - C) $2L$
 - D) $4L$
 - E) $8L$

Correct Answer : Option D

- 110.** An alternating current having the peak value $10\sqrt{2}A$ is used to heat a metal wire. To produce the same heating effect, the constant current required is
- A) $10\sqrt{2}A$
 - B) $5A$
 - C) $14A$
 - D) $7A$
 - E) $10A$

Correct Answer : Option E

- 111.** If v_r, v_X and v_v are the speeds of gamma rays, X-rays and visible light respectively in vacuum, then
- A) $v_g > v_v > v_X$
 - B) $v_g < v_v < v_X$
 - C) $v_g = v_v = v_X$
 - D) $v_g > v_v < v_X$
 - E) $v_X < v_g < v_v$

Correct Answer:-Question Cancelled

- 112.** When a ray of light moves from one medium to another medium,
- A) its frequency remains unchanged
 - B) its frequency alone changes
 - C) its wavelength remains unchanged
 - D) both its frequency and wavelength change
 - E) its velocity remains constant

Correct Answer : Option A

- 113.** The Brewster's angle i_B for any interface should lie between
- A) 30° and 45°
 - B) 45° and 90°

- C) 0° and 30°
- D) 0° and 90°
- E) 30° and 60°

Correct Answer : Option B

114. In an Young's double slit experiment, the band width of the fringes observed is β , when light of wave length λ is used. With same experimental set up, to double the band width of the fringes, the wave length of light required is

- A) λ
- B) $\frac{\lambda}{2}$
- C) 2λ
- D) $\frac{\lambda}{4}$
- E) $\frac{\lambda}{8}$

Correct Answer : Option C

115. Pick out the INCORRECT statement from the following :
In photoelectric phenomenon,

- A) the value of stopping potential is the same for radiations of all frequencies
- B) the stopping potential is more negative for the incident radiation of higher frequency
- C) the value of saturation current depends on the intensity of incident radiation
- D) the value of saturation current is independent of frequency of incident radiation
- E) the emission of electrons is instantaneous

Correct Answer : Option A

116. If λ be the wavelength of any electromagnetic radiation, the de-Broglie wavelength of its quantum (photon) is

- A) $\frac{\lambda}{4}$
- B) λ
- C) $\frac{\lambda}{2}$
- D) 2λ
- E) $\frac{3\lambda}{4}$

Correct Answer : Option B

117. The half-life periods of two radioactive materials A and B are 1500 years and 1200 years respectively. If their mean life periods are τ_A and τ_B respectively, then the value of the ratio $\frac{\tau_A}{\tau_B}$

- A) $\frac{5}{4}$
- B) $\frac{2}{3}$
- C) $\frac{3}{5}$
- D) $\frac{5}{7}$
- E) $\frac{2}{5}$

Correct Answer : Option A

118. The greatest wavelength of the radiation that will ionize unexcited hydrogen atom is

- A) 1820 Å
- B) 450 Å
- C) 910 Å
- D) 700 Å
- E) 1400 Å

Correct Answer : Option C

119. An alternating voltage of 250 V, 50 Hz is applied to a full wave rectifier. If the internal resistance of each diode is 10Ω and the load resistance is $5k\Omega$, the peak value of output current is

- A) 0.05 A
- B) 0.07 A
- C) 0.02 A
- D) 0.03 A
- E) 0.04 A

Correct Answer : Option B

120. The reverse biasing in a junction diode,

- A) increases the number of majority charge carriers
- B) increases the number of minority charge carriers
- C) reduces the number of minority charge carriers
- D) decreases the potential barrier
- E) increases the potential barrier

Correct Answer : Option E

121. The density of 3 M aqueous solution of a solute 'X' is 1.86 g mL^{-1} . The molality of the solution is (Molar mass of solute 'X' is 120 g mol^{-1})

- A) 3m
- B) 4m
- C) 2m

- D) 5m
- E) 1m

Correct Answer : Option C

122. The Vividh Bharati station of All India Radio, Kozhikode, broadcasts on a frequency of 1500 kHz. What is the wavelength of the electromagnetic radiation emitted by transmitter? ($c = 3 \times 10^8 \text{ms}^{-1}$)

- A) 200 m
- B) 300 m
- C) 100 m
- D) 250 m
- E) 150 m

Correct Answer : Option A

123. Which of the following experimental phenomenon is explained by the wave nature of electromagnetic radiation?

- A) Black-body radiation
- B) Photoelectric effect
- C) Diffraction
- D) Variation of heat capacity of solids as a function of temperature
- E) Line spectra of atoms with reference to hydrogen

Correct Answer : Option C

124. Which of the following pair of oxides is neutral?

- A) Al_2O_3 and Na_2O
- B) Al_2O_3 and As_2O_3
- C) Cl_2O_7 and Na_2O
- D) Cl_2O_7 and Al_2O_3
- E) CO and N_2O

Correct Answer : Option E

125. The correct increasing order of dipole moment of NF_3 , H_2S , $CHCl_3$ and NH_3 molecules is

- A) $NF_3 < H_2S < CHCl_3 < NH_3$
- B) $NH_3 < H_2S < CHCl_3 < NF_3$
- C) $NF_3 < CHCl_3 < H_2S < NH_3$
- D) $NH_3 < CHCl_3 < H_2S < NF_3$
- E) $CHCl_3 < H_2S < NF_3 < NH_3$

Correct Answer : Option A

126. Choose the **INCORRECT** pair of **MOLECULE** and its **SHAPE** among the following:

- A) SF_4 Seesaw
- B) BrF_5 Trigonal bipyramidal
- C) NH_3 Trigonal pyramidal
- D) XeF_4 Square planar
- E) ClF_3 T-shape

Correct Answer : Option B

127. In the reaction $3/2 O_{2(g)} \rightarrow O_{3(g)}$, the value of $\Delta_r G^\ominus$ at 298 K is approximately ($K_p = 10^{-30}$ and $2.303RT = 5.7 kJ mol^{-1}$)

- A) $171 kJ mol^{-1}$
- B) $191 kJ mol^{-1}$
- C) $-171 kJ mol^{-1}$
- D) $-191 kJ mol^{-1}$
- E) $100 kJ mol^{-1}$

Correct Answer : Option A

128. Which of the following has least mean multiple bond enthalpy (in $kJ mol^{-1}$) at 298 K?

- A) $N \equiv N$
- B) $C \equiv N$
- C) $C = C$
- D) $C \equiv O$
- E) $C = N$

Correct Answer : Option C

129. Which of the following can act as Lewis acid?

- A) H_2O
- B) HO^-
- C) F^-
- D) NH_3
- E) $AlCl_3$

Correct Answer : Option E

130. The concentration of hydrogen ions in a sample of soft drink is $2 \times 10^{-4} mol lit^{-1}$. Its pH value is ($\log 2 = 0.3010$)

- A) 4.369
- B) 3.699

- C) 2.369
- D) 5.301
- E) 3.301

Correct Answer : Option B

131. Which of the following is the correct order of conductivity (in $S\ m^{-1}$)?

- A) Fe < Na < Cu < Ag
- B) Fe < Cu < Na < Ag
- C) Ag < Na < Cu < Fe
- D) Ag < Cu < Na < Fe
- E) Na < Fe < Cu < Ag

Correct Answer : Option A

132. 'Layer Test' is used to identify

- A) Bromide
- B) Fluoride
- C) Potassium
- D) Water
- E) Chloride

Correct Answer : Option A

133. Which of the following solvent has highest value of Molal elevation constant, K_b ?

- A) Cyclohexane
- B) Carbon disulphide
- C) Carbon tetrachloride
- D) Acetic acid
- E) Chloroform

Correct Answer : Option C

134. The initial concentration of N_2O_5 in the first order reaction, $N_2O_{5(g)} \rightarrow 2NO_{2(g)} + \frac{1}{2} O_{2(g)}$, was $1.68 \times 10^{-2} \text{ mol } L^{-1}$ at 310 K. The concentration of N_2O_5 after 10 minutes was $0.84 \times 10^{-2} \text{ mol } L^{-1}$. What is the rate constant of the reaction at 310 K? ($\log 2 = 0.3010$)

- A) 0.0693 min^{-1}
- B) 0.693 min^{-1}
- C) 6.93 min^{-1}
- D) 0.0639 min^{-1}
- E) 0.0963 min^{-1}

Correct Answer : Option A

135. Which of the following statement is not true about a catalyst?

- A) It catalyses the spontaneous reactions
- B) A small amount of the catalyst can catalyse the large amount of reactants.
- C) It does not alter the Gibbs energy of a reaction.
- D) It catalyses the non-spontaneous reactions.
- E) It does not change the equilibrium constant of a reaction.

Correct Answer : Option D

136. The most common oxidation states of chromium are

- A) +2,+7
- B) +3,+6
- C) +2,+4
- D) +2,+5
- E) +3,+5

Correct Answer : Option B

137. Which of the following statement is true about potassium permanganate?

- A) It is isostructural with $KClO_3$.
- B) It is paramagnetic in nature.
- C) It oxidizes oxalates to carbon monoxide.
- D) The structure of permanganate ion is square planar.
- E) It is prepared by fusion of MnO_2 with an alkali metal hydroxide and an oxidising agent.

Correct Answer : Option E

138. The type of sulphide formed by Lanthanoids is

- A) LnS_3
- B) LnS_2
- C) LnS
- D) Ln_2S_3
- E) Ln_2S

Correct Answer : Option D

139. In which of the following compound, Mn has +7 oxidation state?

- A) $MnOF$
- B) MnO_2F
- C) MnO_3F_2
- D) $MnOF_2$



Correct Answer : Option E

140. Which of the following is a heteroleptic complex?

- A) $[Co(NH_3)_6]^{3+}$
- B) $[Fe(CN)_6]^{4-}$
- C) $[Co(SCN)_4]^{2-}$
- D) $[Co(NH_3)_4Cl_2]^+$
- E) $[Co(CN)_6]^{3-}$

Correct Answer : Option D

141. Which of the following technique is used to separate chloroform and aniline?

- A) Fractional distillation
- B) Distillation under reduced pressure
- C) Steam distillation
- D) Continuous extraction
- E) Distillation

Correct Answer : Option E

142. In Kolbe's electrolytic method, when sodium acetate is electrolysed, the gases generated at anode are

- A) ethane and H_2
- B) H_2 and CO_2
- C) methane and ethane
- D) ethane and CO_2
- E) methane and H_2

Correct Answer : Option D

143. The number of sigma (σ) and pi (π) bonds present in 3-Methylbut-1-ene are respectively

- A) 1 and 14
- B) 18 and 2
- C) 16 and 2
- D) 17 and 1
- E) 14 and 1

Correct Answer : Option E

144. The order of reactivity of the following compounds towards S_N2 displacement reaction is (i) 2-Bromo-2-methylbutane (ii) 1-Bromopentane (iii) 2-Bromopentane

- A) (ii) > (i) > (iii)
- B) (iii) > (i) > (ii)
- C) (ii) > (iii) > (i)
- D) (i) > (ii) > (iii)
- E) (iii) > (ii) > (i)

Correct Answer : Option C

145. The IUPAC name of phenyl isopentyl ether is

- A) 3-Methylbutoxybenzene
- B) 2-Methylbutoxybenzene
- C) 2-Methylphenoxybutane
- D) 4-Methylbutoxybenzene
- E) 1-Methylbutoxybenzene

Correct Answer : Option A

146. Phenol on treatment with chloroform in the presence of NaOH, a -CHO group is introduced at ortho position of benzene ring. The reaction is known as

- A) Kolbe's reaction
- B) Reimer-Tiemann reaction
- C) Gattermann-Koch reaction
- D) Stephen reaction
- E) Sandmeyer reaction

Correct Answer : Option B

147. Toluene on treatment with chromic oxide in presence of acetic anhydride at 273 - 283 K gives compound(X). Compound(X) on hydrolysis with aqueous acid gives compound(Y). The compounds (X) and (Y) are respectively

- A) Benzylidene diacetate and phenol
- B) Benzylalcohol and benzene
- C) Benzylidene diacetate and benzaldehyde
- D) Benzene and phenol
- E) Benzaldehyde and phenol

Correct Answer : Option C

148. Fehling's reagent is a mixture of

- A) aqueous $CuSO_4$ and ammonical $AgNO_3$ solution
- B) aqueous $CuSO_4$ and 2,4-DNP
- C) aqueous KOH and ammonical $AgNO_3$ solution
- D) aqueous $CuSO_4$ and alkaline sodium potassium tatarate
- E) aqueous KOH and alkaline sodium potassium tatarate

Correct Answer : Option D

The order of basic strength of following amines is

149. (i) CH_3NH_2 (ii) $(C_2H_5)_2NH$ (iii) $C_6H_5NH_2$ (iv) $C_6H_5NHCH_3$

- A) (ii) < (i) < (iv) < (iii)
- B) (iii) < (iv) < (ii) < (i)
- C) (ii) < (iii) < (iv) < (i)
- D) (i) < (ii) < (iii) < (iv)
- E) (iii) < (iv) < (i) < (ii)

Correct Answer : Option E

150. The disease caused by the deficiency of riboflavin is

- A) Cheilosis
- B) Rickets
- C) Beri beri
- D) Scurvy
- E) Xerophthalmia

Correct Answer : Option A