Online Examinations (Even Sem/Part-I/Part-II Examinations 2020 - 2021

Course Name - –Mathematics II
Course Code - DEE204

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Mark only one oval.

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- [ ] M.SC.(AM)
- [ ] M.SC.CS)
- [ ] M.SC.(ANCS)
- [ ] M.SC.(MM)
- [ ] B.A.(Eng)

Answer all the questions. Each question carry one mark.

9. 1.

$\int e^{e^x+x}dx =$

Mark only one oval.

$e^{e^x}+c$

Option 1

e^x+c

Option 2

$e^x+\frac{x^2}{2}+c$

Option 3

none of these

10. 2.

$$\int \frac{\cos 2x dx}{(\sin x+\cos x)^2} =$$

Mark only one oval.

$\log|\sin x+\cos x|$

Option 1

$\log|\sin x-\cos x|$

Option 2

$-\log|\sin x+\cos x|$

Option 3

None of these

11. 3.

$\int 2^{3x} dx =$

Mark only one oval.

$\frac{2^{3x}}{3\log 2}+c$

Option 1

$\frac{2^{3x+1}}{3x+1}+c$

Option 2

$32^{3x}\log 2+c$

Option 3

None of these

12. 4.

$\int \cot^2 x dx =$

Mark only one oval.

- -(cotx+x)+c
- -(cotx-x)+c
- -cotx+x+c
- None of these

13. 5.

$$\int \frac{2\tan x}{1+\tan^2 x}dx =$$

Mark only one oval.

$\frac{1}{2}\cos 2x + c$

Option 1

$\frac{1}{2}\sin 2x + c$

Option 2

$-\frac{1}{2}\cos 2x + c$

Option 3

$\frac{1}{2}\sec^2 2x + c$

Option 4

14. 6.

$$\int \tan^{-1}\left(\frac{\sin 2x}{1+\cos 2x}\right)dx =$$

Mark only one oval.

$\frac{x}{2}+c$

Option 1

x+c

x^2+c

Option 3

$\frac{x^2}{2}+c$

Option 4

15. 7.

$\int e^{3\log x} dx =$

Mark only one oval.

$x^3 + c$

Option 1

logx+c

Option 2

$\frac{x^4}{4} + c$

Option 3

$x^4 + c$

Option 4

16. 8.

The formula $\int a^x dx = \frac{a^x}{\log a} + c$ is invalid for a=

Mark only one oval.

- 1
- 2
- 3
- None of these

17. 9.

$$\int \frac{e^{2\tan^{-1}x}}{1+x^2}dx =$$

Mark only one oval.

$e^{2\tan^{-1}x}$

Option 1

$\frac{x}{1+x^2}$

Option 2

$\frac{1}{2}e^{2\tan^{-1}x}$

Option 3

none of these

18. 10.

$\int \sin^{-1}(\cos x)\,dx =$

Mark only one oval.

$\frac{\pi}{2}x-\frac{x^2}{2}+c$

Option 1

$\frac{\pi}{2}x+\frac{x^2}{2}+c$

Option 2

$-\frac{\pi}{2}x-\frac{x^2}{2}+c$

Option 3

None of these

19. 11.

$\int e^{1-\log x} dx =$

Mark only one oval.

- ex+c
- elogx+c
- xloge+c
- None of these

20. 12.

$\int xe^x dx =$

Mark only one oval.

$xe^x + e^x + c$

Option 1

$2e^x + c$

Option 2

$xe^x - e^x + c$

Option 3

None of these

21. 13.

$\int x \cos x dx =$

Mark only one oval.

xsinx-cosx+c

Option 1

xsinx+cosx+c

Option 2

xsinx+secx+c

Option 3

−sinx+cosx+c

Option 4

22. 14.

$$\int_1^2 \frac{x+1}{x^3} dx$$

Mark only one oval.

$\frac{6}{7}$

Option 1

$\frac{7}{8}$

Option 2

$\frac{1}{9}$

Option 3

None of these

23. 15.

$$\int_0^{\frac{\pi}{2}} \cos^2 x dx =$$

Mark only one oval.

$\frac{\pi}{2}$

Option 1

$\frac{\pi}{3}$

Option 2

$\frac{\pi}{6}$

Option 3

$\frac{\pi}{4}$

Option 4

24. 16.

$$\int_0^{\frac{\pi}{2}} \sin x dx =$$

Mark only one oval.

- 0
- 1
- -1
- None of these

25. 17.

$$\int_0^{\frac{\pi}{4}} \tan^2 x dx =$$

Mark only one oval.

$1-\frac{\pi}{4}$

Option 1

$1+\frac{\pi}{4}$

Option 2

$-\frac{\pi}{4}$

Option 3

$\frac{\pi}{4}$

Option 4

26. 18.

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

Mark only one oval.

$\frac{\pi}{4}$

Option 1

$\frac{\pi}{2}$

Option 2

$\frac{2\pi}{3}$

Option 3

None of these

27. 19.

$$\int_0^{\frac{\pi}{2}} \sin^2 x dx =$$

Mark only one oval.

- 0
- 1
- 2
- Option 4

$\frac{\pi}{4}$

28. 20.

The order and degree of the differential equation $\left(\frac{dy}{dx}\right)^2 - 2\frac{dy}{dx} = 3x$ are

Mark only one oval.

- 2,1
- 2,2
- 1,1
- 1,2

29. 21.

The order and degree of the differential equation $\left(\frac{d^2y}{dx^2}\right)^2 + \left(\frac{dy}{dx}\right)^3 + y = 0$ are

Mark only one oval.

- 2,3
- 2,1
- 2,2
- 1,3

30. 22. _____

The order and degree of the differential equation $\left(\frac{d^2y}{dx^2}\right) = \left(1 + \frac{dy}{dx}\right)^{\frac{2}{3}}$ are

Mark only one oval.

- 2,3
- 3,2
- 1,3
- None of these

31. 23.

The general solution of the differential equation $\frac{d^2y}{dx^2}+x\frac{dy}{dx}=0$ contains

Mark only one oval.

- 1 arbitrary constant
- 2 arbitrary constant
- 3 arbitrary constant
- 4 arbitrary constant

32. 24. The differential equation whose general solution is y=Asinx is

Mark only one oval.

- $\frac{dy}{dx}=y\cos x$
- $\frac{dy}{dx}=y\cot x$
- $\frac{dy}{dx}=y\tan x$
- None of these

33. 25.

The differential equation whose general solution is $y = Ae^{x} + Be^{-x}$ is

Mark only one oval.

$\frac{d^2y}{dx^2} = -y$

Option 1

$\frac{dy}{dx} = Ae^{x} - Be^{-x}$

Option 2

$\frac{d^2y}{dx^2} = y$

Option 3

None of these

34. 26.

The general solution of $(x+2)dx+(y+3)dy=0$ is

Mark only one oval.

$x^2+4x+6y=0$

Option 1

$x^2+y^2+4x+6y=0$

Option 2

$x^2+y^2+4x+6y=c$

Option 3

None of these

35. 27. The general solution of xdy-ydx=0 is

Mark only one oval.

$y^2 + x^2 = c^2$

Option 1

$y^2 = Ax^2$

Option 2

$y^2 = Ax$

Option 3

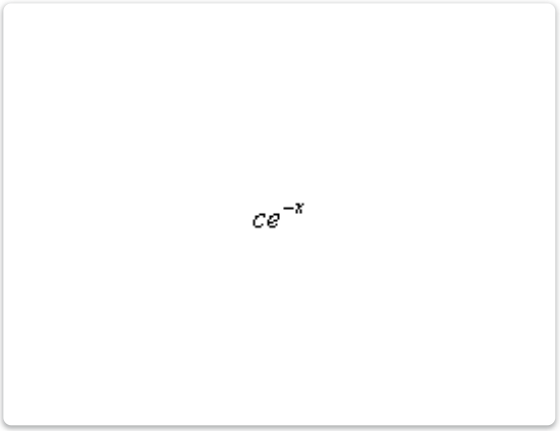
$y^2 = -x$

Option 4

36. 28.

If $\frac{dy}{dx} = y$ then y=

Mark only one oval.



Option 1

cx

Option 3

clogx

37. 29.

If $\frac{dy}{dx} = -\frac{y}{x}$ and y=2 at x=2 then y=

Mark only one oval.

$\frac{4}{x}$

Option 1

$\frac{1}{x}$

Option 2

x^2

Option 3

x

38. 30.

The general solution of $\frac{dy}{dx} = \frac{x^2}{y^2}$ is

Mark only one oval.

$x^3 + y^3 = c$

Option 1

$x^3 - y^3 = c$

Option 2

$x^2 + y^2 = c$

Option 3

$x^2 - y^2 = c$

Option 4

39. 31.

The general solution of the differential equation $\frac{dy}{dx}=\frac{1+y^2}{1+x^2}$ is

Mark only one oval.

$y=\tan^{-1}x+c$

Option 1

$x=\tan^{-1}y+c$

Option 2

tan(xy)=c

y-x=c(1+xy)

40. 32.

Integrating factor of $\left(x^2+y^2+x\right)dx+xydy=0$ is

Mark only one oval.

X

Y

x^2

y^2

Option 3

Option 4

41. 33.

Integrating factor of $2xydx+\left(y^2-x^2\right)dy=0$ is

Mark only one oval.

$\frac{1}{x^2}$

Option 1

$\frac{1}{y^2}$

Option 2

$\frac{1}{x}$

Option 3

$\frac{1}{y}$

Option 4

42. 34.

Solution of $xdx + ydy + \left(x^2 + y^2\right)xdx = 0$ is

Mark only one oval.

$x^2 + y^2 = C$

Option 1

$\log\left(x^2 + y^2\right) + x^3 = C$

Option 2

$\log\left(x^2 + y^2\right) + x^2 = C$

Option 3

None of These

43. 35.

The integrating factor of the equation $\frac{dx}{dy}+\frac{x}{1+y^2}=\frac{e^{-\tan^{-1}y}}{1+y^2}$ is

Mark only one oval.

$\tan^{-1}y$

Option 1

$e^{\tan y}$

Option 2

$e^{\sin^{-1}y}$

Option 3

$e^{\tan^{-1}y}$

Option 4

44. 36.

The CF of $\left(D^2+4\right)Y=x^2$ is

Mark only one oval.

$C_1\cos 2x+C_2\sin 2x$

Option 1

$C_1\cos x+C_2\sin x$

Option 2

$C_1\cos 4x+C_2\sin 4x$

Option 3

$C_1\cos 4x+C_2\sin 4x$

Option 4

45. 37.

$\frac{1}{D}\left(x^{\frac{5}{2}}\right)=$

Mark only one oval.

$\frac{7}{2}x^{\frac{7}{2}}$

Option 1

$\frac{2}{7}x^{\frac{7}{2}}$

Option 2

$x^{\frac{7}{2}}$

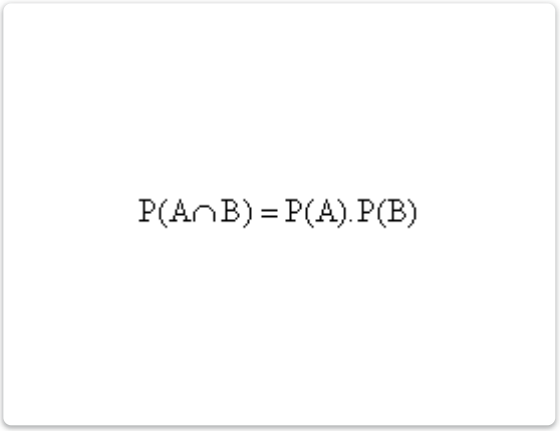
Option 3

$x^{\frac{7}{2}}$

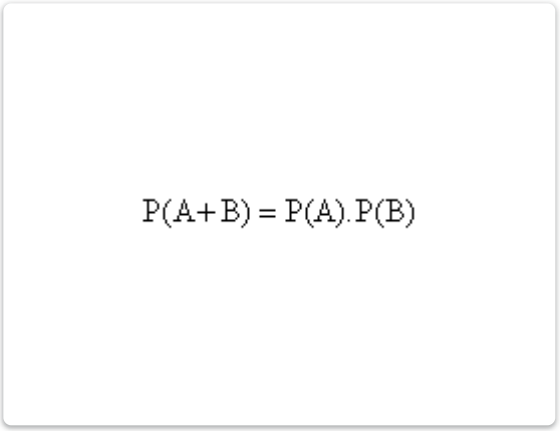
Option 4

46. 38. Condition for independence of two events A and B is

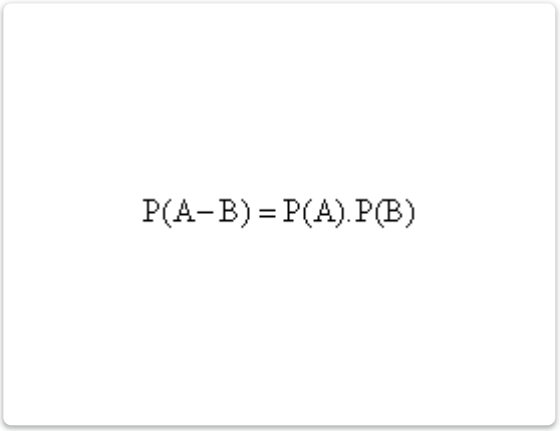
Mark only one oval.



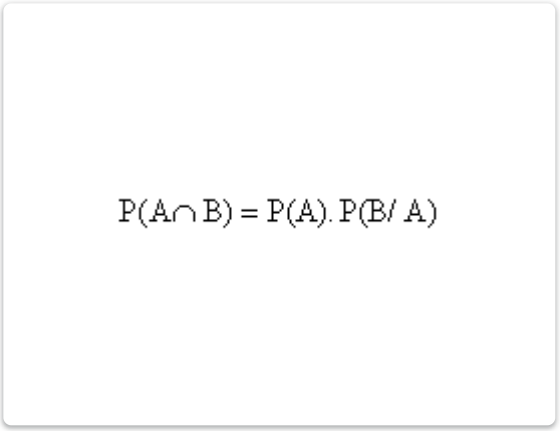
Option 1



Option 2



Option 3



Option 4

47. 39.

If $P(A+B)=\frac{2}{7}$ then the probability of $P(\overline{A}.\overline{B})$ is

Mark only one oval.

$\frac{1}{7}$

Option 1

$\frac{2}{7}$

Option 2

$\frac{5}{7}$

Option 3

None of these

48. 40.

The probability of any event A satisfies

Mark only one oval.

$P(A) \geq 1$

Option 1

$P(A) < 0$

Option 2

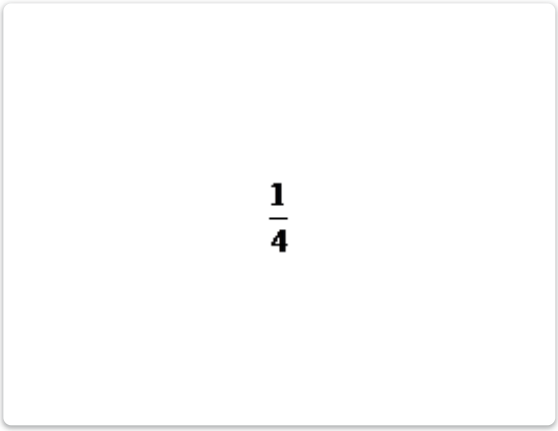
$0 \leq P(A) \leq 1$

Option 3

None of these

49. 41. Probability of obtaining an even number in the throw of a fair die is

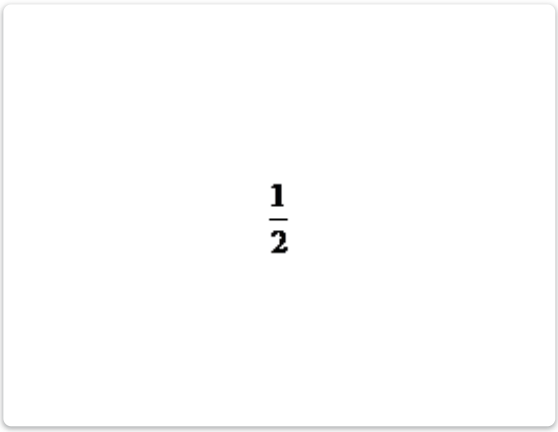
Mark only one oval.



Option 1

Option 2

1



Option 4

50. 42.

If $P(A \cup B) = \frac{7}{8}, P(A \cap B) = \frac{1}{4}, P(A^c) = \frac{5}{8}$ then P(B)=

Mark only one oval.

$\frac{3}{8}$

Option 1

$\frac{3}{4}$

Option 2

$\frac{1}{3}$

Option 3

$\frac{1}{4}$

Option 4

51. 43. If two events are exhaustive then

Mark only one oval.

$P(A \cap B) = 1$

Option 1

$P(A \cup B) = 1$

Option 2

$P(A \cap B) = 0$

Option 3

$P(A \cup B) = 0$

Option 4

52. 44. Probability of an event is 1. Then the event is

Mark only one oval.

- impossible events
- event space itself
- (a) or (b)
- none of these

53. 45. One card is drawn from a standard pack of 52. The probability which is either king or a queen is

Mark only one oval.

$\frac{1}{3}$

Option 1

$\frac{2}{13}$

Option 2

$\frac{3}{13}$

Option 3

None of these

54. 46. Two unbiased coins are tossed. Then the probability of obtaining at least one tail is

Mark only one oval.

$\frac{4}{3}$

Option 1

$\frac{3}{4}$

Option 2

$\frac{1}{3}$

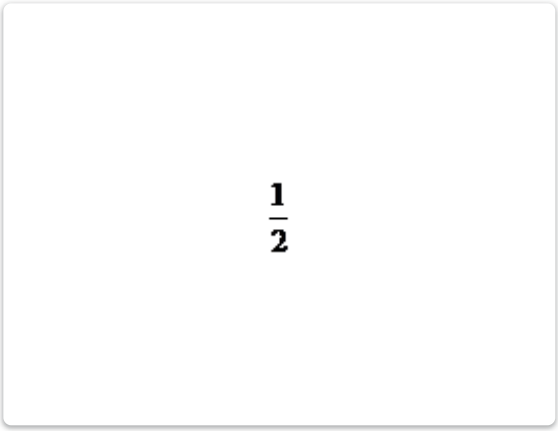
Option 3

None of these

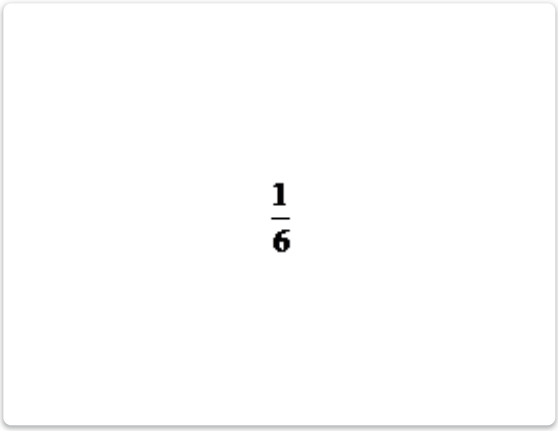
55. 47. A die is thrown once, then the probability of obtaining a ‘six’ is

Mark only one oval.

Option 1



Option 2



Option 3

None of these

56. 48. The probability of getting at least one of the following events , point ‘six’ or ‘one’ on the top in rolling of an unbiased die once is

Mark only one oval.

- Option 1: $\frac{1}{6}$
- Option 2: $\frac{1}{9}$
- Option 3
- None of these

57. 49.

Let A and B be two events and $P\left(\bar{A}\right)=0.3, P(B)=0.4, P\left(A\bar{B}\right)=0.5$; then $P\left(A+\bar{B}\right)=$

Mark only one oval.

- 0.5
- 0.8
- 1
- none of these

58. 50. An urn contains 4 white and 6 black balls. Two balls are drawn one after another without replacement. Probability of one ball white and one black is

Mark only one oval.

$\frac{1}{24}$

Option 1

$\frac{4}{15}$

Option 2

$\frac{8}{15}$

Option 3

None of these

59. 51.

Median of the frequency distribution

x_i :	3	2	5	1
f_i :	2	1	1	3

Mark only one oval.

5

Option 2 $\frac{16}{7}$

Option 3 $\frac{1}{2}$

Option 4 $\frac{7}{16}$

60. 52.

If y=5x-20 and $\bar{x}$=30 then the value of $\bar{y}$

Mark only one oval.

- 130
- 140
- 30
- none of these

61. 53. The mode of the observations 2,1,1,2,3,5,2,1,2,6,4,2,1,3 is

Mark only one oval.

- 3
- 4
- 2
- 1

62. 54.

The mode of the frequency distribution

x_i :	0	1	2	3	4
f_i :	23	24	21	25	20

Mark only one oval.

- 0
- 1
- 2
- 3

63. 55. The variance of 1,5,6 is

Mark only one oval.

- 3.67
- 4.67
- 9.1
- 0.67

64. 56.

$2x+y=3$ is the relation between two variables x and y . If $\sigma_x = 3$ then σ_y =

Mark only one oval.

- 3
- 4
- 6
- None of these

65. 57. The relation among mean, median and mode is

Mark only one oval.

- Mode=3 Median-2 Mean
- Mode=3 Median+2 Mean
- Mode=2 Median-3 Mean
- Mode=2 Median + 3 Mean

66. 58.

If 10y=x-85 and $\bar{y} = -0.523$ then $\bar{x} =$

Mark only one oval.

- 80
- 79.77
- 80.77
- 75.72

67. 59. If var(x)=5 and y=5x+6 then var(y) =

Mark only one oval.

- 125
- 150
- 6
- None of these

68. 60. Which are the following digits are not significant of the number 0.025

Mark only one oval.

- 0
- 2
- 5
- None of these

69. 61. The number of significant digit in the number 3.0056 is

Mark only one oval.

- 3
- 4
- 5
- 2

70. 62. Newton' s forward interpolation formula is use to interpolate

Mark only one oval.

- near end
- near central position
- near beginning
- none of these

71. 63. Lagrange's interpolation formula deals with

Mark only one oval.

- Equispaced arguments only
- Unquispaced arguments only
- both (a) and (b)
- none of these

72. 64. The degree of the interpolation polynomial of a function whose values are known at 8 points is

Mark only one oval.

- 5
- 6
- 7
- 8

73. 65. Trapezoidal rule can be applied if the number of equal sub-intervals of the interval of integration is

Mark only one oval.

- odd
- even
- both
- none of these

74. 66. The degree of precision of Simpson's one third rule is

Mark only one oval.

- 1
- 2
- 3
- 5

75. 67. After rounding off to three places of decimals the number 57.1092 becomes

Mark only one oval.

- 57.109
- 57.100
- 57.110
- 0.109

76. 68. After being rounded off to two places of decimals the number 8.1083 becomes

Mark only one oval.

- 8.10
- 0.11
- 8.11
- none of these

77. 69. After being rounded off to four places of decimals the number 3.4506531 becomes

Mark only one oval.

- 3.4506
- 3.4507
- 3.451
- none of these

78. 70. Bisection method used for finding the real root of a transcendental equation is

Mark only one oval.

- ◯ an analytical method
- ◯ graphical method
- ◯ iterative method
- ◯ None of these