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Roll No. .....

DOVC (Level 3) 2nd Sem.
(Ref. & Air, Cond., Auto, Servicing, ITM, PT, SD, AMT, FP, EMS, GM)
Subject : Applied Mathematics-II

Time : 2 Hrs. M.M. : 50

SECTION-A

Note: Very short answer questions. Attempt all ten questions. (10x1=10)

Q.1 A matrix of order 2x3 is a _____ Matrix. (Square/Rectangular)

Q.2 Determinant always have same number of rows and columns.(True/False)

Q.3 If x lies in first quadrant and sin x=1/2 then cos x is equal to

a) ½ b) -1/2

c) $\sqrt{3}/2$ d) $-\sqrt{3}/2$

Q.4 If x lies in 2nd quadrant then the value of $\sin^{-1}(1/2)$ is

a) 120^{o} b) 240^{o}

c) 150^{o} d) None of these

SECTION-C

Note: Long answer type questions. Attempt any one questions out of two questions. (10x1=10)

Q.19 If $y = x^3 - 12x^2 + 36x + 17$ then find the points of maxima & minima and their corresponding maximum and minimum values.

Q.20 Solve the following linear programming graphically
Maximise $Z=2x+3y$ subject to constraints
$x+y \leq 4, x \geq 0 Y \geq 0$

Q.5 the value of given limit : lim x sec x when $x \to 0$ is

a) 0 b) 2

c) 1 d) 1/0

Q.6 Every continuous function is always differentiable. (True/False)

Q.7 If $\frac{dx^n}{dx} = nx^{n-1}$ then $\frac{dx^{-7}}{dx}$ = _____

Q.8 Integeral of e^{4x} with respect to x is _____

Q.9 If i, j,k are unit vectors then the magnitude of vector a = 2i + 3j-k is _____

Q.10 'a' means + , 'b' means - ,'c' means x & 'd' means ÷ then 18c14a6b16d4 is equal to

a) 254 b) 245

c) 425 d) 524

SECTION-B

Note: Short answer type questions. Attempt any six questions out of Eight questions. (6x5 = 30)

Q.11 Find $A + 2B$ when $A = \begin{bmatrix} 5 & 2 \\ 1 & 3 \end{bmatrix}$ & $B = \begin{bmatrix} 1 & 0 \\ 2 & 5 \end{bmatrix}$

Q.12 Evaluate $\begin{vmatrix} 1 & -2 & 3 \\ 3 & 2 & 1 \\ 2 & 0 & 2 \end{vmatrix}$

Q.13 if $Y = \sqrt{\sin x + \sqrt{\sin x + \cdots\cdots^{\infty}}}$ then prove that

$(2y-1)\frac{dy}{dx} = \cos x$

Q.14 If Displacement $S = 3t^2 - 4t + 3$ of a particle at any time t is given by this relation then find its velocity at time $t = 2$ sec. Also find its acceleration

Q.15 Integerate $x \cos x$ with respect to x by parts method.

Q.16 Evaluate $\int_0^{\pi/2} COS^7 x \, dx$ .Also write its formula

Q.17 Solve the Differential equation $\frac{dy}{dx} = \frac{2y-1}{3x+2}$

Q.18 find the Direction cosines of line through two points (-2,4,-5) and (1,2,3)