Unit-3 (MCQ)

1) Laplace transform of t is $\Rightarrow \dfrac{1}{s^2}$

2) $L(\cos t) \Rightarrow \dfrac{s}{s+1}$

3) If $L[f(t)] = F(s)$, then $L\left[\displaystyle\int_0^t f(u)\,du\right]$ is $\Rightarrow F(s)$.

4) The value of $L^{-1}\left(\dfrac{s-2}{s^2-4s+13}\right)$ is $\Rightarrow e^{2t}\sin 3t$

5) $L(2^t)$ is $\Rightarrow \dfrac{1}{s-\log 2}$

6) $L(t^{3/2})$ is $\Rightarrow \dfrac{3\sqrt{\pi}}{4s^{5/2}}$

7) The value of $L^{-1}(1)$ is $\Rightarrow \dfrac{1}{s}$

8) $L(f(t) * g(t))$ is $\Rightarrow F(s)G(s)$

9) $L(4^t)$ is $\Rightarrow \dfrac{1}{s-\log 4}$

10) $L\left(\dfrac{\cos at}{t}\right)$ is $\Rightarrow$ Does not exist.

11) $L(\sin(2t+3))$ is $\Rightarrow \dfrac{2\cos 3}{s^2+4} + \dfrac{(\sin 3)s}{s^2+4}$.

12) $L^{-1}\left(\dfrac{s-3}{s^2-6s+13}\right)$ is $\Rightarrow e^{3t}\cos 2t$

13) Laplace transform of $t\cos at$ $\Rightarrow \dfrac{s^2-a^2}{(s^2+a^2)^2}$

14) Inverse Laplace transform of $\dfrac{s}{(s+2)^2}$ $\Rightarrow e^{-2t}(1-2t)$.

15) $L\left(\dfrac{\sin 4t}{t}\right)$ $\Rightarrow \cot^{-1}\left(\dfrac{s}{4}\right)$

16) $L^{-1}\left(\dfrac{1}{s^2+9}\right)$ $\Rightarrow \dfrac{\sin 3t}{3}$.

17) $L(\sin 3t)$ is equal to $\Rightarrow \dfrac{3}{s^2+89}$

18) The value of the function $f(t)=ae^{-bt}$ using IVT is $\Rightarrow a$.

19) $L\left[\displaystyle\int_0^t \sin t\,dt\right]$ $\Rightarrow \dfrac{1}{s(s^2+1)}$.

20) $L(t^4)$ is equal to $\Rightarrow \dfrac{4b}{s^5}$.

21) If $L[f(t)]=F(s)$, then $L[e^{at}f(t)]$ is equal to $\Rightarrow F(s-a)$

22) $L[\cos 2t]$ is equal to $\Rightarrow \dfrac{s}{s^2+4}$

23) $L^{-1}\left[\dfrac{1}{s^2+9}\right]$ is equal to. $\Rightarrow \dfrac{\sin 3t}{3}$

24) $L^{-1}\left[\dfrac{s-2}{s^2-4s+13}\right]$ is equal to $\Rightarrow e^{2t}\cos 3t$

25) $L[\sinh at]$ $\Rightarrow \dfrac{a}{s^2-a^2}$ if $s>|a|$.

26) The value of $1 * \sin t$ is $\Rightarrow 1 - \cos t$

27) If $L[f(t)] = F(s)$, then $L[f'(t)] \Rightarrow sL[f(t)] - f(0)$

28) $L(t^3)$. $\Rightarrow \dfrac{6}{s^4}$.

29) $L^{-1}\left[\dfrac{1}{(s-5)^2}\right]$ is $\Rightarrow e^{st} t$

30) If $L[f(t)] = F(s)$, then $L\left[\dfrac{f(t)}{t}\right]$ $\Rightarrow \displaystyle\int_{s}^{\infty} F(s)\, ds$.

   is if $\lim\limits_{t \to 0} \dfrac{f(t)}{t}$ exists.

31) $L[t e^{2t}]$ $\Rightarrow \dfrac{1}{(s-2)^2}$.

32) $L(\cosh at)$. $\Rightarrow \dfrac{s}{s^2 - a^2}$

33) The value of $L\displaystyle\int_{0}^{t} \sin t\, dt$ $\Rightarrow \dfrac{1}{s(s^2+1)}$

34) $L(t^4)$ is equal to. $\Rightarrow \dfrac{4!}{s^5}$.

35) If $L[f(t)] = F(s)$, then $L[e^{-at} f(t)]$ is equal to $\Rightarrow F(s+a)$

36) $L^{-1}\left(\dfrac{1}{(s+a)^2}\right)$ $\Rightarrow t e^{-at}$.

37) If $L[f(t)] = F(s)$, then $L[f''(t)] \Rightarrow sL[f(t)] - f'(0)$.

38) An example of a function for which the LT does not exist $\Rightarrow g(t) = \tan t$.

39) $L^{-1}(1)$ is $\Rightarrow \delta(t) \frac{1}{S}$

40) Evaluate using LT without integration $\int_1^{\infty} \frac{e^{-\theta t} - e^{-2t}}{t} dt$ $\Rightarrow \log(2)$.

41) $L(t^{\frac{1}{2}})$ is equal to $\Rightarrow \frac{\sqrt{\pi}}{x}$

42) The value of $1 - e^x$ is $\Rightarrow e^x - 1$.

43) If $L(f(t)) = F(x)$ then $L(e^{-st} f(t)) \Rightarrow f(s+a)$

44) $L^{-1}\left(\frac{1}{S^2}\right)$ $\Rightarrow t$