

**Program: SE-I.T. (SEM-III)**

**Curriculum Scheme: Revised 2016**

**Examination: Second Year Semester III**

**Course Code:**

**Course Name: Applied Mathematics-III**

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	$L[f(t)] = F(s)$ then $L[t^n f(t)] =$	Correct Answer option
Option A:	$(-1)^n \frac{d^n}{ds^n}(F(s))$	A
Option B:	$(-1)^{n+1} \frac{d^n}{ds^n}(F(s))$	
Option C:	$\frac{d^n}{ds^n}(F(s))$	
Option D:	$(-1)^{n+1} \frac{d^{n+1}}{ds^{n+1}}(F(s))$	
Q2.	Find $L[2t^3 + \cosh 4t]$	
Option A:	$\frac{12}{s^4} + \frac{s}{s^2 + 16}$	
Option B:	$\frac{48}{s^4} + \frac{s}{s^2 + 16}$	
Option C:	$\frac{12}{s^4} + \frac{4}{s^2 + 16}$	
Option D:	$\frac{12}{s^4} + \frac{s}{s^2 - 16}$	D
Q3.	Find $L^{-1}(2 \tanh^{-1} s)$	
Option A:	$\left(\frac{2}{t} \sinh 2t\right)$	
Option B:	$\left(\frac{2}{t} \sin ht\right)$	B
Option C:	$\left(\frac{2}{t} \cosh 2t\right)$	
Option D:	$\left(\frac{2}{t} \cos ht\right)$	
Q4.	Find $L^{-1}\left(\frac{s+2}{s^2+4s+7}\right)$	

Option A:	$e^{-t} \cdot \sin\sqrt{3}t$	
Option B:	$e^{-3t} \cdot \cosh\sqrt{3}t$	
Option C:	$e^{-2t} \cdot \cos\sqrt{3}t$	C
Option D:	$e^{-4t} \cdot \cos 6t$	
Q5.	Find $L^{-1}\left(\frac{2s}{s^4+4}\right)$	
Option A:	$4\cos t \cdot \sinh t$	
Option B:	$2\cos t \cdot \cos t$	
Option C:	$\sin 3t \cdot \sinh t$	
Option D:	$\sin t \cdot \sinh t$	D
Q6.	Find $L\{t e^{2t} \cos 3t\}$	
Option A:	$-\frac{(s-2)^2 - 9}{[(s-2)^2 + 9]^2}$	
Option B:	$\frac{(s-2)^2 - 9}{[(s-2)^2 - 9]^2}$	
Option C:	$\frac{(s-2)^2 - 9}{[(s-2)^2 + 9]^2}$	C
Option D:	$\frac{(s-2)^2 + 9}{[(s-2)^2 + 9]^2}$	
Q7.	If $L\{f(t)\} = \frac{2}{s^3} e^{-s}$ Solve $L\{f(2t)\}$	
Option A:	$\frac{8}{s^3} e^{-\frac{s}{2}}$	A
Option B:	$\frac{1}{2} \frac{(-8)}{s^3} e^{-\frac{s}{2}}$	
Option C:	$\frac{-8}{s^3} e^{-\frac{s}{2}}$	
Option D:	$\frac{1}{2} \frac{8}{s^3} e^{-\frac{s}{2}}$	
Q8.	Find $L^{-1}\left\{\frac{s+4}{(s+2)^2 + 2^2}\right\}$	
Option A:	$e^{-2t} [\cos 2t - \sin 2t]$	
Option B:	$e^{2t} [\cos 2t + \sin 2t]$	
Option C:	$e^{-2t} [\cosh 2t + \sinh 2t]$	

Option D:	$e^{-2t} [\cos 2t + \sin 2t]$	D
Q9.	If $S = S_1 \cup S_2 \dots S_n$ and if S is infinite then	
Option A:	At least one of $S_i$ is infinite	A
Option B:	Not more than one $S_i$ is infinite	
Option C:	At least one of $S_i$ is finite	
Option D:	None of these	
Q10.	If A and B are two sets such that $A \cup B = A \cap B$ then	
Option A:	$A = \phi$	
Option B:	$B = \phi$	
Option C:	$A = B$	C
Option D:	None of these	
Q11.	$(A \cup B) \cap C = \dots\dots\dots$	
Option A:	$(A \cap B) \cup (A \cap C)$	
Option B:	$(A \cup B) \cup (A \cap C)$	
Option C:	$(A \cap B) \cap (A \cap C)$	
Option D:	None of these	D
Q12.	State D'Morgans law	
Option A:	$(A \cap B)^c = A^c \cup B^c$	
Option B:	$(A \cup B)^c = A^c \cap B^c$	
Option C:	A & B both	C
Option D:	None of A & B	
Q13.	If $P_1, P_2$ is partition on S, then which one of the following is true?	
Option A:	$P_1 \cup P_2 = S$	A
Option B:	$P_1 \cup P_2 = \phi$	
Option C:	$P_1 \cap P_2 = S$	
Option D:	None of them	
Q14.	If $ S  = n$ then $ P(S)  = \dots\dots\dots$	
Option A:	$n^2$	
Option B:	$2^n$	B
Option C:	$2^n - 2$	
Option D:	$2^{n-2}$	
Q15.	If $A \subseteq B$ what can you say about $A \cup B$	
Option A:	B	
Option B:	A	B
Option C:	Can't predict	

Option D:	None of these	
Q16.	If $A = \{1,2,3\}$ and $B = \{a,b\}$ then which one of the following is relation from A to B?	
Option A:	$\{(1,a), (1,b), (2,2), (3,b)\}$	
Option B:	$\{(2,a), (1,b), (1,2), (3,b)\}$	
Option C:	$\{(1,a), (1,b), (2,b), (3,b)\}$	C
Option D:	None of these	
Q17.	If $f$ is a function from A to B which is bijective then $f$ must be	
Option A:	Surjective may not be injective	
Option B:	Injective may not be surjective	
Option C:	Surjective & injective both	C
Option D:	None of these	
Q18.	If $f : N \rightarrow N$ given by $f(x) = x + 1$ , where N is set of natural numbers then $f$ is	
Option A:	Injective but not surjective	A
Option B:	Surjective but not Injective	
Option C:	Surjective as well as Injective	
Option D:	Neither Surjective not Injective	
Q19.	If $f : R \rightarrow R$ given by $f(x) = 2x$ then $f^{-1}$ is given by	
Option A:	$f^{-1}(x) = 1/2$	
Option B:	$f^{-1}(x) = 2x$	
Option C:	$f^{-1}(x) = x+2$	
Option D:	$f^{-1}(x) = x/2$	D
Q20.	$f(x) = x^2$ , $g(x) = x + 1$ then $f \circ g(2)$	
Option A:	8	
Option B:	5	
Option C:	9	C
Option D:	0	
Q21.	In how many ways you can make a committee of 4 from 8 boys and 5 girls if at most 2 girls are there in the committee ?	
Option A:	560	A
Option B:	550	
Option C:	540	
Option D:	500	
Q22.	Two cards are drawn from a pack of a card. What is the	

	probability both are king?	
Option A:	.0054	
Option B:	.0045	B
Option C:	.5	
Option D:	.25	
Q23.	In how many ways you can arrange 4 boys and 2 girls in a row so that both the girls are together?	
Option A:	720	
Option B:	120	
Option C:	240	C
Option D:	122	
Q24.	A ticket is drawn from tickets numbered from 1 to 20. What is the probability that the number on the card is multiple of 3 or 5.	
Option A:	1/2	
Option B:	9/20	B
Option C:	2/5	
Option D:	8/15	
Q25.	A bag contains 2 red, 3 green, and 2 blue balls. Two balls are drawn at random. What is the probability that the balls are not blue.	
Option A:	10/21	A
Option B:	11/21	
Option C:	2/7	
Option D:	5/7	