

## **GENERAL APTITUDE** Q. No. 1 – 5 Carry One Mark Each

1.	1. Choose the most appropriate alternative from the options given below to complete the following sentence:									
	If the	tried soldier wante	d to lie down, he	the	the mattress out on the balcony					
	(A)	should take		(B)	shall take					
	(C)	should have taken		(D)	will have taken					
An	swer:	( <b>C</b> )								
			1							
2.	If (	$(1.001)^{1259} = 3.52$ and	$1(1.001)^{2062} = 7.85, 1$	then (1.001)	3321 =					
	(A)	2.23	(B) 4.23	(C)	11.37	(D) 27.64				
An	swer:	( <b>D</b> )								
3.	One	of the parts (A, B, C	C, D) in the sentence	given below	v contains an ERR	OR. Which one the following is	;			
	INCO	ORRECT?								
	I req	uested that he should	d be given the drivin	ig test today	instead of tomorro	ow.				
	(A)	requested that		(B)	should be given					
	(C)	the driving test		(D)	instead of tomorr	.ow				
Ans	swer:	(B)								
	XX71	1 <u>6 (1 6. 11</u>								
4.	w nic	ch one of the follow	ing options is the cic	sest in mea	ning to the word gi	iven below?				
			(D) Freedom	$(\mathbf{C})$	Coordian	(D) Maticulousnass				
	(A)		(b) Freedom	(C)	Coercion	(D) Meticulousiless				
An	swer:	( <b>b</b> )								
							_			
INCORRECT? I requested that he should be given the driving test today instead of tomorrow. (A) requested that (B) should be given (C) the driving test (D) instead of tomorrow Answer: (B) 4. Which one of the following options is the closest in meaning to the word given below? Latitude (A) Eligibility (B) Freedom (C) Coercion (D) Meticulousness Answer: (B)										

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	Choo	ose the most app	ropriate w	ord from the	e options give	n below to com	plete the f	ollowing	g sentence:
	Give	n the seriousnes	s of the si	tuation that h	ne had to face	, his was im	pressive.		
	(A)	beggary			(B)	nomenclature	;		
	(C)	jealousy			(D)	nonchalance			
<b>nsw</b>	er:	( <b>D</b> )							
			9	Q. No. 6 – 1	0 Carry Two	Marks Each			
6.	Raju value	has 14 currency of the notes is 1	notes in I Rs.230. TI	his pocket co	onsisting of o f Rs. 10 notes	nly Rs.20 notes that Raju has i	s and Rs. 1	0 notes.	The total mone
	(A)	5	(B)	6	(C)	9	(D)	10	
Answ	er:	(A)							
	disci	nline was brusta	1 Dissipli						
	odds Whic (A)	and conditions ch one of the fol Through regin circumstances.	were again lowing state tentation v	ne on the ba ist them. itements best was the main	attlefield kept t sums up the 1 reason for th	units obedient, meaning of the le efficiency of	, intact and e above pas the Romar	l fighting ssage? n legions	g, even when th s even in advers
	odds Whic (A) (B)	and conditions ch one of the fol Through regin circumstances. The legions we	were again lowing state the treated	ne on the banst them. Itements best was the main	attlefield kept t sums up the a reason for th as if the men	units obedient, meaning of the le efficiency of were animals.	, intact and e above pas the Romar	l fighting ssage? n legions	g, even when th s even in advers
	odds Whice (A) (B) (C)	and conditions ch one of the fol Through regin circumstances. The legions we Discipline was	were again lowing stand mentation were treated the armie	ne on the banst them. Itements best was the main l inhumanly a es' inheritance	attlefield kept t sums up the a reason for th as if the men ce from their s	units obedient, meaning of the le efficiency of were animals. seniors.	, intact and above pas the Roman	l fighting ssage? n legions	g, even when th s even in advers
	odds Whic (A) (B) (C) (D)	and conditions ch one of the fol Through regin circumstances. The legions we Discipline was The harsh disc against them.	ere treated the armie	Ine on the banst them. Internents best was the main I inhumanly a es' inheritance which the le	attlefield kept t sums up the a reason for the as if the men ce from their s egions were s	units obedient, meaning of the e efficiency of were animals. seniors. subjected to lea	, intact and above pas the Roman d to the od	l fighting sage? n legions lds and	g, even when th s even in advers conditions bein

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- 9. The data given in the following table summarizes the monthly budget of an average household.

Category	Amount (Rs)		
Food	4000		
Clothing	1200		
Rent	2000		
Savings	1500		
Other expenses	1800		
The approximate perce	entage of the month	ly budget NOT spent on saving is	
(A) 10%	(B) 14%	(C) 81%	(D) 86%
swer: (D)			

10. There are eight bags of rice looking alike, seven of which have equal weight and one is slightly heavier. The weighting balance is of unimited capacity. Using this balance, the minimum number of weighings required to identify the heavier bag is







8. In the following figure,  $C_1$  and  $C_2$  are ideal capacitors.  $C_1$  has been charged to 12V before the ideal switch S is closed at t = 0. The current i(t) for all t is



9. The impedance looking into nodes 1 and 2 in the given circuit is













Answer: (A)

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24. For the circuit shown in the figure, the voltage and current expressions are

 $v(t) = E_1 \sin(\omega t) + E_3 \sin(3\omega t)$  and

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 $i(t) = I_1 \sin(\omega t - \phi_1) + I_3 \sin(3\omega t - \phi_3) + I_5 \sin(5\omega t).$ 

The average power measured by the Wattmeter is



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27	Given that		
21.	A = $\begin{bmatrix} -5 & -3 \\ 2 & 0 \end{bmatrix}$ and I = $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ , the	e value of $A^3$ is	
	(A) 15A+12I (B) 1	9A+30I (C) 17A+15I	(D) 17A+21I
Ansv	ver: (B)		
2 <mark>8.</mark>	The direction of vector A is radia k is constant. The value of n for v	ally outward from the origin, with $ A  = k$ which $\nabla \cdot A = 0$ is:	$r^{n}$ where $r^{2} = x^{2} + y^{2} + z^{2}$ and
	(A) -2 (B) 2	(C) 1	(D) 0
Ansv	ver: (A)		
20	The maximum value of $f(y) = y$	$3  0x^2 + 24x + E$ in the interval $\begin{bmatrix} 1 & 6 \end{bmatrix}$ is	
29.	The maximum value of $T(\mathbf{x}) = \mathbf{x}$	-9x + 24x + 5 in the interval $[1, 0]$ is	(D) 1(
Ansu	(A) 2I  (B) 2	5 (C) 41	(D) 40
30.	Consider the Differential equation	n	
	$\frac{d^{2}y(t)}{dt^{2}} + 2\frac{dy(t)}{dt} + y(t) = \delta(t)$ The numerical value of $\frac{dy}{dt}$	with $y(t) _{t=0^{-}} = -2$ and $\frac{dy}{dt} _{t=0^{-}} = 0$	
	$dt _{t=0^+}$		
	(A) -2 (B) -	-1 (C) 0	(D) 1
Ansv	ver: (D)		

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## **31.** If $V_A - V_B = 6V$ , then $V_C - V_D$ is



**32.** Assuming both the voltage sources are in phase, the value of R for which maximum power is transferred from circuit A to circuit B is



**33.** The voltage gain  $A_v$  of the circuit shown below is









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	(A)	low pass filter w	ith $f_{3dB} = \frac{1}{(R_1 + R_2)}$	$\frac{1}{1}$ rad / s			
	(B)	high pass filter w	with $f_{3dB} = \frac{1}{R_1C}$	rad / s			
	(C)	low pass filter w	ith $f_{3dB} = \frac{1}{R_1C}rac{1}{R_2C}$	ud / s			
	(D)	high pass filter w	with $f_{3dB} = \frac{1}{(R_1 + R_2)}$	$\frac{1}{2}$ C rad / s			
Answ	ver:	( <b>B</b> )					
10.	The i	nput x(t) and outp	ut y(t) of a syst	tem are related as	$y(t) = \int_{-\infty}^{t} x(\tau) d\tau$	$\cos(3 au)d au$ . The s	ystem is
	(A)	time-invariant an	d stable	(B)	stable and r	ot time-invaria	nt
	(C)	time-invariant an	d not stable	(D)	not time-inv	variant and not s	stable
Answ	er:	( <b>D</b> )					
41. Answ	A do nume entire (A)	buble convex lens erical aperture of ( be beam into the fib 1.44mm	is used to co 0.5. The minim er is: (B) 2.50m	ouple a laser bear um focal length o nm (C)	m of diamete of the lens that 4.33mm	r 5mm into an should be used (D) 5	optical fiber with I in order to focus t .00mm
12.	An a and v reads (A)	nalog voltmeter u vith a multiplier s : 371V	ses external m setting of 80k ( (B) 383V	ultiplier settings. 2, it reads 352V (C)	With a multing . For a multing 394V	Dier setting of a plier setting of a plier setting of	$20 \mathrm{k} \Omega$ , it reads 440 $40 \mathrm{k} \Omega$ , the voltmet
Answ	ver:	( <b>B</b> or <b>D</b> )	(2) 0001				

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3.	The	open loop 150	transfer function	of a unity neg	gative feedback	control	system is	given	by
	G(s)	$s = \frac{10.8}{s(s+9)(s+10.8)}$	(B) = 22.3 dI	B (C)	18: 34.1dB	(D)	45.6dB		
Ans	wer:	( <b>C</b> )							

44. A dynamometer arm makes contact with the piezoelectric load cell as shown. The g-constant of the piezoelectric material is  $50 \times 10^{-3}$  Vm/N and the surface area of the load cell is  $4 \text{ cm}^2$ . If a torque  $\tau = 20$  Nm is applied to the dynamometer, the output voltage V<sub>0</sub> of the load cell is



**45.** Water (density: 1000 kgm<sup>-3</sup>) stored in a cylindrical drum of diameter 1 m is emptied through a horizontal pipe of diameter 0.05 m. A pitot-static tube is placed inside the pipe facing the flow. At the time when the difference between the stagnation static pressure measured by the pitot-static tubes is 10 kPa, the rate of reduction in water level in the drum is,

(A) 
$$\frac{1}{200\sqrt{5}}$$
 ms<sup>-1</sup> (B)  $\frac{1}{75\sqrt{10}}$  ms<sup>-1</sup> (C)  $\frac{1}{50\sqrt{10}}$  ms<sup>-1</sup> (D)  $\frac{1}{40\sqrt{5}}$  ms<sup>-1</sup>

Answer: (D

GATEFORUM IN-GATE-2012 www.gateforumonline.com 46. The U-tube manometer of tube diameter D is filled with liquid of zero viscosity. If the volume of the liquid filled is V, the natural frequency of oscillations in the liquid level about its mean position, due to small perturbations, is (A)  $\frac{D}{2\sqrt{2\pi}}\sqrt{\frac{g}{v}}$  (B)  $\frac{2\sqrt{2}}{\sqrt{\pi}}\frac{\sqrt{gV}}{D^2}$  (C)  $\frac{1}{2\sqrt{\pi}}\frac{\sqrt{gD}}{V^{1/3}}$  (D)  $\frac{1}{\sqrt{\pi}}\sqrt{\frac{g}{D}}$ Answer: **(A)** \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ The open loop transfer function of a unity gain negative feedback control system is given by 47.  $G(s) = \frac{s^2 + 4s + 8}{s(s+2)(s+8)}$ . The angle  $\theta$ , at which the root locus approaches the zeroes of the system, satisfies: (A)  $\left|\theta\right| = \pi - \tan^{-1}\left(\frac{1}{4}\right)$ (B)  $|\theta| = \frac{3\pi}{4} - \tan^{-1}\left(\frac{1}{3}\right)$ (D)  $|\theta| = \frac{\pi}{4} - \tan^{-1}\left(\frac{1}{3}\right)$ (C)  $|\theta| = \frac{\pi}{2} - \tan^{-1}\left(\frac{1}{4}\right)$ Answer: (C) **Common Data for Questions: 48 & 49** With 10V d.c. connected at port A in the linear nonreciprocal two-port network shown below, the following were observed: 10hm connected at port B draws a current of 3A 2.5ohm connected at port B draws a current of 2A В A 48. With 10V dc connected at port A, the current drawn by 70hms connected at port B is: 3/7A **(B)** 5/7A (C) 1A (D) 9/7A (A) **Answer: (C)** © All rights reserved by Thinkcell Learning Solutions Pvt. Ltd. No part of this booklet may be reproduced or utilized in any form without the written permission.





## Linked Answer Questions: Q.52 to Q.55 Carry Two Marks Each

Statement for Linked Answer Questions: 52 & 53

