Tribhuvan University

Institute of Engineering (IOE)

BE Entrance Examination-2079

Attempt all Questions. Time: 2 hrs

Full Marks: 140 Shift: Morning

Select the best alternatives:

Section-I

1. If the momentum of body is constant then which of the following will be constant?

a)force

b)torque

c) velocity

d)moment of inertia

(60*1=60)

2. Dimension of G is

a)[M-1L3T-2]

b)[M-1L3T2]

c)[ML3T-2]

d)[ML-3T2]

b)21

3. The torque produced in current carrying current depends upon

a)Area

b)Shape of coil

c)Nature of the coil

d)Perimeter of the coil

4. Pressure exerted by gas molecules is directly proportional to

a)No. of molecules

b) No. of molecules per unit volume

c)1/3 No. of molecules per unit mole

d)1/3 No. of molecules per unit volume

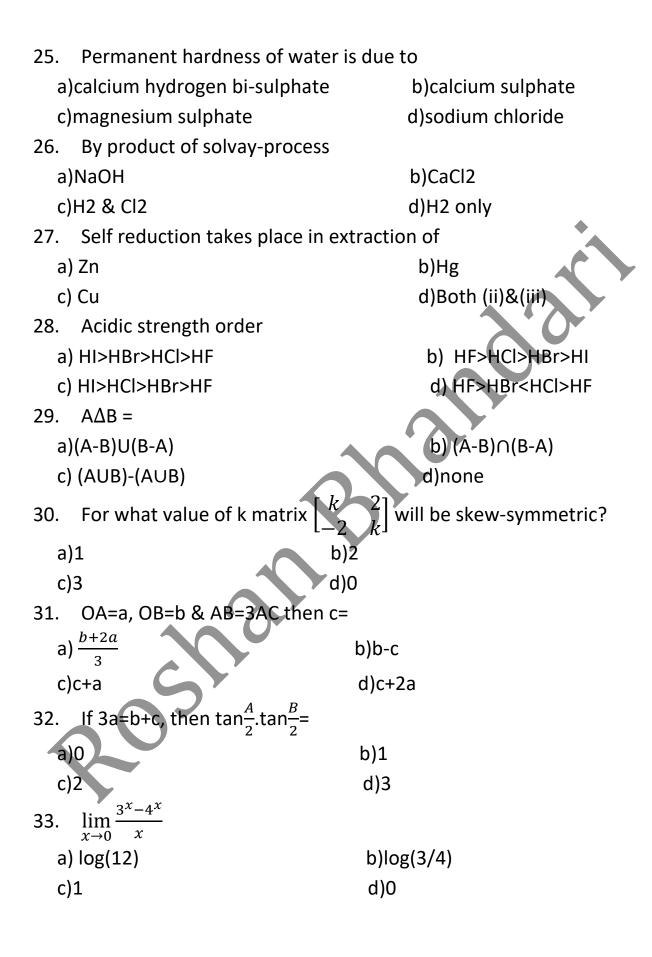
5. When two moving waves of intensity I moving in opposite direction having same amplitude and frequency superimpose then intensity of resultant wave is

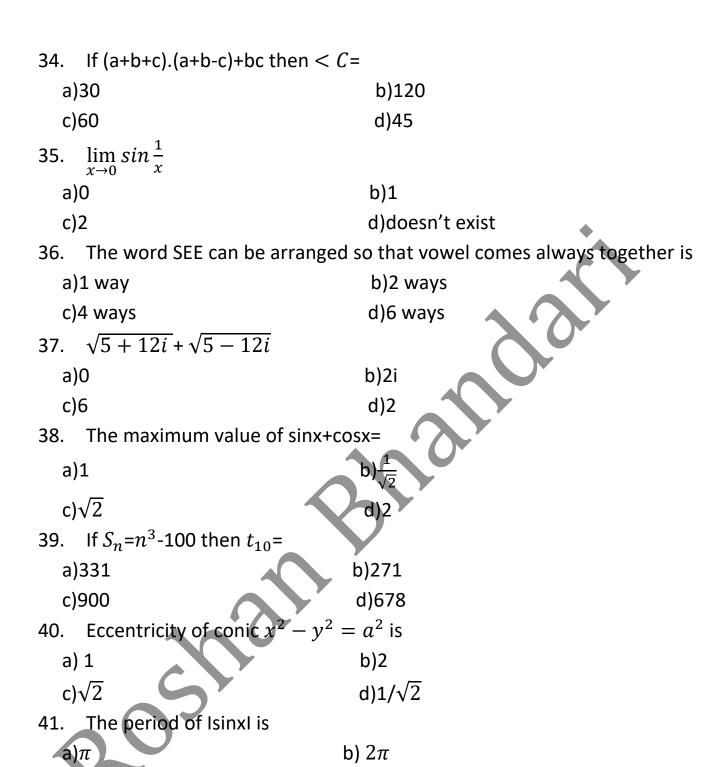
a)I

c)I/2 d)0

6. Centripetal force from inertial fram	ne is
a)along the radius	b)outwards the radius
c)Along the direction of velocity	d)opposite to the direction of velocity
7. Efficiency of X-ray experiment is	
a) 99%	b)1%
c)less than 1%	d)none
8. The reading of voltameter is based	on
a)P=I2RT	b)V=IR
c)P=VI	d)V=V1+V2
9. Unit of Heat Capacity is equal to	3.0
a)Work	b)Specific Heat capacity
c)Gas constant	d)Heat
10. Term of Resistivity is	
a) m/ne $^2 au$	b)m/ne $ au$
c)e²/meτ	d)e/me $ au$
11. What change in frequency of org	gan pipe f when half of it dipped into
water?	
a)f/2	b)2f
c)f	d)4f
12. The rifle fires a bullet and gun r	ecoils then which one is true
	b)KE of rifle is equal to the bullet
c)KE of rifle is more than bullet	d)no change in KE
13. New focal length of convex lens	of F when it is dipped into water is
a) f	b)2f
c)3f	d)4f
14. Flux induced in coil is independe	ent of
a)Nature of coil	b)time
c)Flux density	d)current
15. Taking small steps in ice is due to	0
a)frictional force of ice is large	b) frictional force of ice is large
c)smaller normal reaction	d)greater normal reaction

16.	The dynamic mass of photon is	
а)0	b)hc/ λ
С)h/ λ	d)h/c× λ
17.	Resolving power of microscope de	epends upon
а)the apertures of objective & eye le	ens
b)focal length of objective & eye len	S
C) aperture of eye lens	•
C)the wavelength of light illuminatin	g the object
18.	Which one has highest O.N?	
а)HClO2	b)HClO3
C)HCIO4	d)HClO5
19.	Ammonia gas is dried by	
а)lime water	b)Quick lime
С)carbon dioxide	d)alcohol
20.	Sodium benzoate treated with so	da lime gives
а)Toluene	b)Benzene
С)Benz aldehyde	d)Benzoic Acid
21.	Shorter bond length is in	
а)sp	b)sp2
С)sp3	d)none
22.	CuSO4 detects water in	
а)alcohol	b)organic compound
C)acid	d)none
23.	Which one has maximum no. of u	npaired electron?
a)Fe+++	b)Cr+++
С)Mn++	d)Zn++
24.	Which one has highest metallic pr	operties
а)F ₂	b) Cl_2
C) <i>Br</i> ₂	d) I_2





d) $\pi/4$

b)x=y

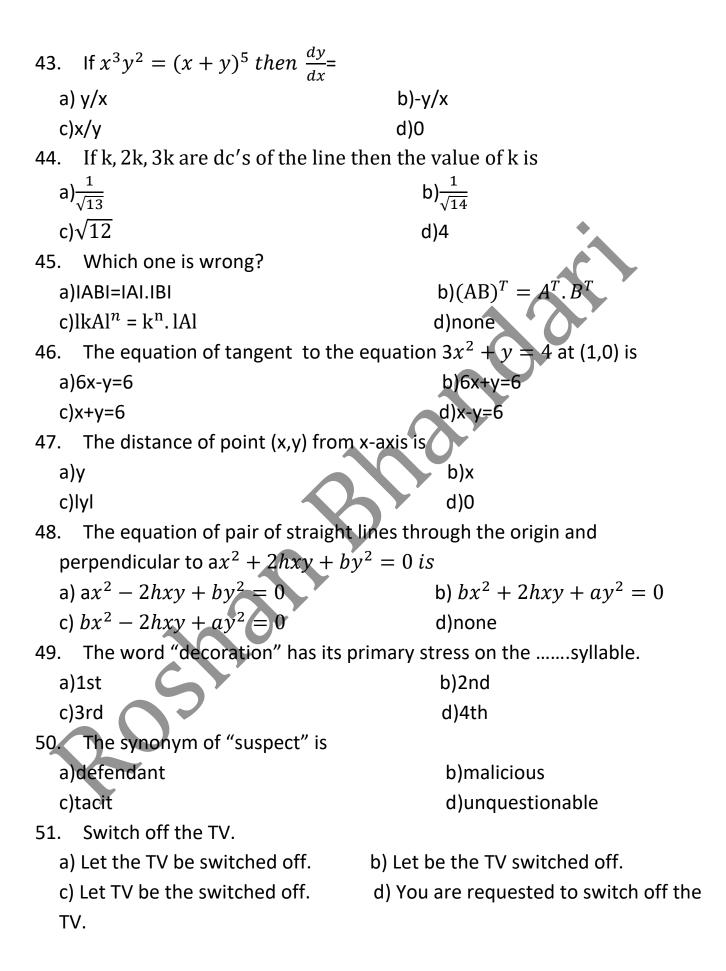
d)both b & c

c) $\pi/2$

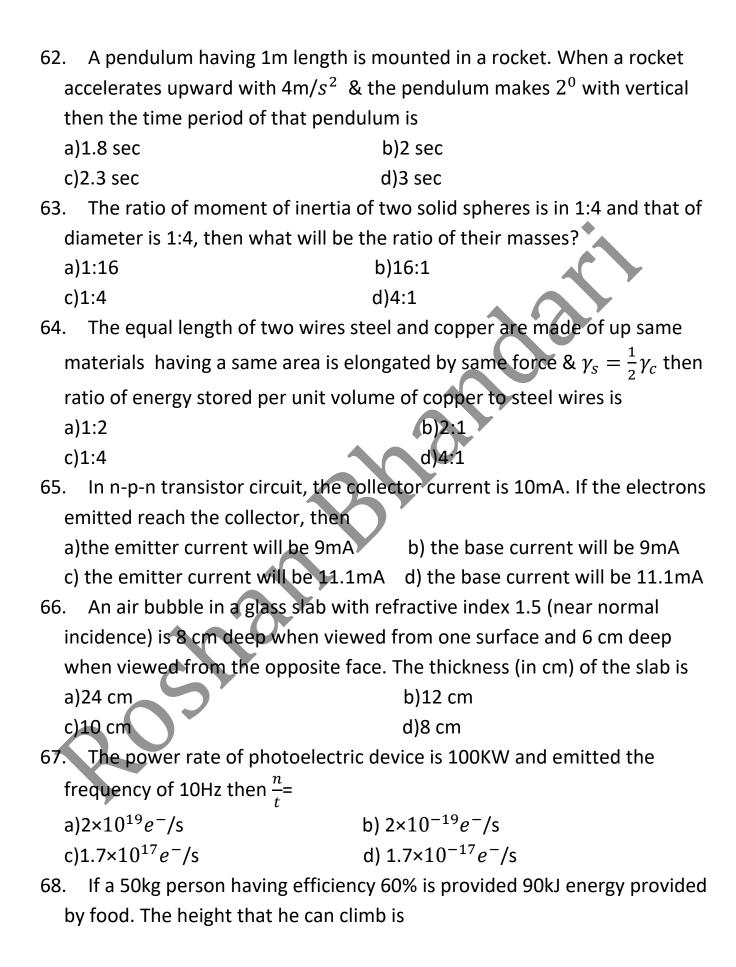
a)x=0,y=0

c)x=1,y=0

 $\sin^{-1} x + \cos^{-1} y = \frac{\pi}{2}$ then



52.	. I helped himthe road.	
	a)to cross	b)crossing
	c)cross	d)to crossing
53.	. Her thinking leansdemocracy	/.
	a)with	b)towards
	c)for	d)none
54.	his principles, he has to be	very careful.
	a)with regard of	b) with regard on
	c) with regard to	d)none
55.	. He crossed the broken bridge	warning.
	a)in spite of	b)despite of
	c)in spite off	d)on
56.	. If she was free, sheto you.	
	a)talked	b)can talked
	c)could talked	d)would talked
57.	. A number of people at station	amazing.
	a)was	b)is
	c)are	d)none
58.	. I hate people laughing at me.	
	a) I hate being laughed at.	b) I don't like people laughed at me.
	c) People are being hated by me.	d)none
59.	. The pattern for "This is a book"	
	a)S+V+O	b) S+V+ adjunct
4	c) S+V	d) S+V+ linking verb
60.	. Which one of them is incorrect?	
	a)lay off	b)get off
	c)see off	d)put off
	Section-II	(40×2=80 marks
61.	. When momentum of body incre	eases by 100%, then its KE increases by
	a)20%	b)40%
	c)100%	d)300%



	a)290m	b)300m
	c)310m	d)310m
69	9. The force between two id	entical charge separated by 1m is 10N.At
	what distance the force will	be 4N?
	a)0.29m	b)0.31m
	c)0.5m	d)0.9m
70	O. At what temperature the	c.rms value of N_2 is same as H_2 at $0^{\circ}C$?
	a)3258° <i>C</i>	b)3120° <i>C</i>
	c)3430° <i>C</i>	d)3458° <i>C</i>
7	1. Second overtone of the c	osed organ pipe and third overtone of the
	organ pipe are equal. If the I	ength of the open organ pipe is 16cm then
	length of closed organ pipe i	S
	a)25.6cm	b)18cm
	c)10cm	d)3.33cm
72		ency 80% works at 4kW and 100V. If the
	secondary voltage is 200V, t	hen the primary and secondary currents are
	respectively	
	a)40A and 16A	b) 16A and 40A
	c) 20A and 40A	d) 40A and 20A
73	3. Potentiometer of wire of	length 1m is connected in series with 490 Ω
	and 2V battery. If 0.2V/cm is	the potential gradient, then resistance of the
	potentiometer wire is	
	a)4.9Ω	b)7.9Ω
	c)5.9Ω	d)6.9Ω
74	4. In Young's double-slit exp	eriment, 0.28mm separation between the
	slits and the screen is placed	1.4m away. 1.2cm is the distance between
the central bright fringe and the fourth bright fringe. Determine the		
	wavelength of light used in t	he experiment.
	a)60nm	b)600nm
	c)70nm	d)700nm

75.	At 80°C distilled water h	nas H₃O⁺ concentr	ation equal to 1 x 10 ⁻⁶ mol/L.
T	he value of K _w at this tem	perature will be	
a))1×10 ⁻¹²	b) 1×10 ⁻¹⁵	
c)	1×10 ⁻⁶	d) 1×10 ⁻⁹	
76.	Equal volume of solutio	n pH=4 & pH=10	are mixed together. The
re	esulting pH of solution is		
a))2	b)4.3	
c)	7	d)8.2	
77.	Lead acetate paper turn	s black when it co	ontacts with
a)	SO_3	b)S O_2	2.0
c)	H_2S	d)HCl	
78.	The reaction taking place	e at the anode w	hen a dilute aqueous solution
0	f CuSO4 is electrolyzed u	sing inert Pt elect	trodes
a)	$Cu \rightarrow Cu^{2++} + 2e^-$	40	b) $2SO_4^{-2} \rightarrow S_2O_3^{2-} + 2e^-$
c)	$2H_2O \rightarrow O_2 + 4H^+ + 4e^-$		d) $2H^++2e\rightarrow H_2$
79.	Addition of CCl4 in alkar	ne is	
a)	Nucleophilic substitution		b)free radical substitution
c)	Oxidation		d)Electrophilic addition
80.	The metal like Cu and Zi	react with conc.	.HN ${\it O}_{ m 3}$ to give
a)	$NO_2 + H_2O$	b)Metal I	Nitride+ N O_2 + H_2 O
c)	Metal Nitrite N $O_2 + H_2$ O	d)Metal I	Nitrate+ N O_2 + H_2 O
81.	The gas formed by AgI t	reated with chlor	oform passed through alkaline
K	$Mn\mathit{O}_4$ gives		
a	Ethane		b)Ethanoic acid
c)	Ethane-1,2-dioic acid		d)Ethyl glycol
82.	The domain of e^{5x} + \log_5	x+3 is	
a))[1,∞]	b)[0,∞]	
c)	(0,∞]	d)(1,∞)	
83.	If $s(s-a)=kbc$, then $k \in$		
a))R b)(0,∞)	
c)	0[0.1] d)	[-1.1]	

		2
84. The coefficient of a	3 in the expansion of $\frac{3}{}$	$\frac{a^2+2a+1}{e^a}$ is
a) $\frac{8}{5}$		·
c) $\frac{-7}{3}$	b) $\frac{-8}{5}$ d) $\frac{7}{3}$	
3	3	
85. The value of tan^{-1}	$\left(\frac{\cos x+1}{\sin x}\right)$	
a)- $\frac{\pi}{4} - \frac{x}{2}$	b)0	*
c)1	d) $\frac{\pi}{4} - \frac{x}{2}$	
86. $\int \tan^{-1} x$, 4 2	
a) $x \tan x + \log(1 + x^2)$	+C	b) xtan x -log(1 + x^2)+0
c) xtan $x + \frac{1}{2} \log(1 + x^2)$		d) $x \tan x - \frac{1}{2} \log(1 + x^2) + \frac{1}{2} \log(1 + x^2$
2		2
-	of the plane passing thr	
		z = 1 and $3x - 4y + z = 5$. b) $x - 2y + 5z = 0$
a) x -2y -5z = 0 c) x + 2y + 5z =0		d) x + 2y - 5z = 0
•	d^2u	1) X + 2y - 32 - 0
88. If $y=\sin x + \cos x$, t	$hen \frac{dy}{dx^2} + y =$	
a)1	b)y	
c)0	d)-y	
89. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, then <i>A</i>	² -5A is equal to	
a)2I	b)-2I	
c)3I	d)null matrix	
90. A person has got 12	2 acquaintances whom	of 8 are relatives. In how
many ways can he invi	te 7 guests so that 5 o	f them may be relatives?
a) 336	b)420	
c)720	d)900	
91. $\lim_{x \to \frac{\pi}{4}} \frac{\tan x - 1}{x - \frac{\pi}{4}}$		
a)1	b)1/2	
c)2	d)4	

92. Find the area bounded by the line, y=2x-4, y=1 and y-axis

a) $\frac{25}{4}$

b) $\frac{7}{3}$

c) $\frac{-25}{4}$

d) $\frac{15}{4}$

93. If a,b,c are in A.P. then the value of $\frac{(a-b)^2}{(b^2-ac)^2}$ =

a) 1

b)2

c)3

d)4

94. The length of latus rectum of the ellipse $4x^2 + 9y^2 = 36$ is

a)4/3

b)3/4

c)8/3

d)3/8

95. Find two numbers whose sum is 15 and when the square of one multiplied by the cube of the other is maximum

a)10 & 5

b)8 &7

c)8 & 7

d)6 & 9

A. Read the passage carefully and check the best option:

The achievement of science in the twentieth century has been very great. Its influence can be felt in every sphere of life. From the small pins and needles to the huge iron sheets and joints, most of the things we require for our everyday use, come out of factories where scientific principles are utilized for practical ends. Science has enabled man to bring forces of nature under control and to use them for his own advantage. It has brought the distant parts of the world close together. Our knowledge of the universe has been much widened on account of the untiring efforts of the astronomers like Jeans and Eddington. Remarkable cures of human diseases have been possible owing to the discovery of some wonderful medicines.

97. What is the main idea of the given passage?

- A. The impact of science can be felt in every sphere of life
- B. Science is an anathema

- C. Nothing is beyond the purview of science
- D. Science can work miracles

98. The mode of approach is

- A. logical
- B. anatomical
- C. descriptive
- D. expository

99. Science has proved a great boon for

- A. scientists
- B. artists
- C. explorers
- D. mankind

100. What is the most appropriate title for the given passage?

- A. Science is a curse
- B. Science, a great boon
- C. Achievements of science
- D. None of these

