SAMUNDRA INSTITUTE OF MARITIME STUDIES

Total Qns:45

BTECH SAMPLE QUESTION PAPER

Max Marks: 100
Duration : 70 min

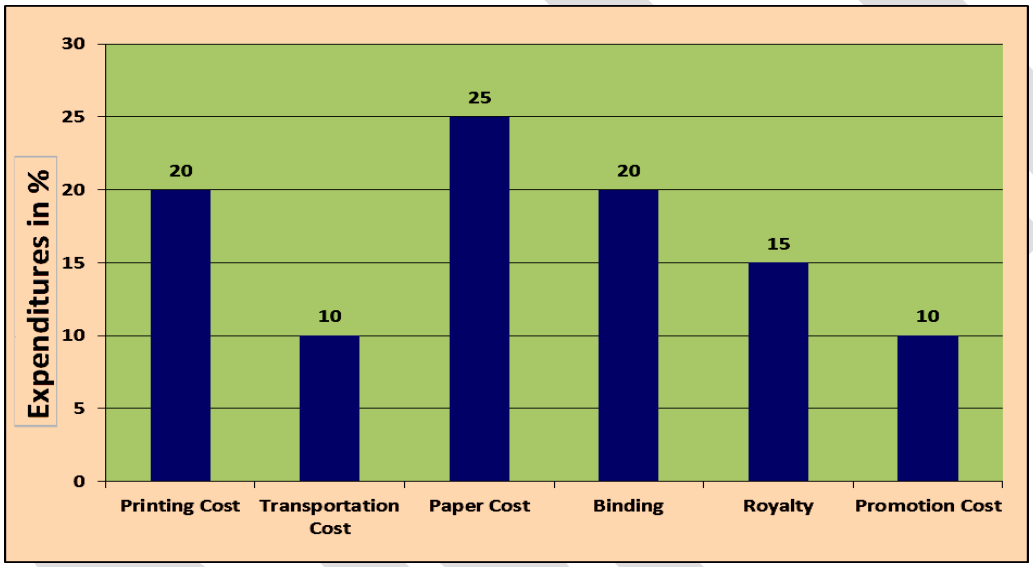
Instructions:

- **Question no 1 to 44 are of objective type and carry 2 marks each.**
- **Question no 45 to be written separately and carries 12 marks.**

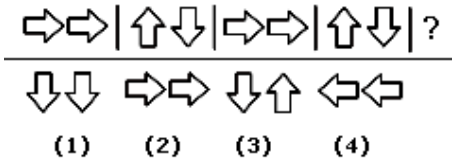
SECTION A: LOGICAL REASONING **(10 x 2 = 20)**

The following bar graph shows the percentage distribution of the expenditure incurred in publishing a book. Study the bar graph and answer the questions based on the graph(Question number 1 to 5) :

Various Expenditures (in percentage) Incurred in Publishing a Book



1.	**The price of the book is marked 20% above the C.P. If the marked price of the book is Rs. 180, then what is the cost of the paper used in a single copy of the book?** **(A)** Rs. 36 **(B)** Rs 37.50 **(C)** Rs. 42 **(D)** Rs. 44.25
2.	**The maximum of the total expenditure is done on** **(A)** paper cost **(B)** printing cost **(C)** royalty **(D)** transportation
3.	**If 5500 copies are published and the transportation cost on them amounts to Rs. 82500, then what should be the selling price of the book so that the publisher can earn a profit of 25%?** **(A)** Rs. 187.50 **(B)** Rs. 191.50 **(C)** Rs. 175 **(D)** Rs. 180
4.	**Royalty on the book is less than the printing cost by:** **(A)** 5% **(B)** 33 % **(C)** 20 % **(D)** 25 %

5.	**If for a certain quantity of books, the publisher has to pay Rs. 30,600 as printing cost, then what will be the amount of royalty to be paid for these books?** **(A)** Rs. 19,450 **(B)** Rs. 21,200 **(C)** Rs. 22,950 **(D)** Rs. 26,150
6.	**Yard is to inch as quart is to** **(A)** gallon **(B)** ounce **(C)** milk **(D)** liquid
7.	**Look carefully at the sequence of symbols to find the pattern. Select correct pattern.**  (1) (2) (3) (4) **(A)** 1 **(B)** 2 **(C)** 3 **(D)** 4
8.	**Oat cereal has more fiber than corn cereal but less fiber than bran cereal.** **Corn cereal has more fiber than rice cereal but less fiber than wheat cereal.** **Of the three kinds of cereal, rice cereal has the least amount of fiber.** **If the first two statements are true, the third statement is** **(A)** True **(B)** False **(C)** Uncertain **(D)** None of all
9.	**Look carefully for the pattern, and then choose which pair of numbers comes next.** 6 10 14 18 22 26 30 **(A)** 34 38 **(B)** 33 37 **(C)** 38 42 **(D)** 36 33
10.	**Which word does NOT belong with the others?** **(A)** book **(B)** index **(C)** glossary **(D)** chapter
SECTION B: MATHEMATICS	**(12 x 2 = 24)**
11.	**The equations of the sides of a triangle are $x+y-5=0, x-y+1=0$ and $y-1=0$, then the coordinates of the circumcentre are** **(A)** (2,1) **(B)** (1,2) **(C)** (2,-2) **(D)** (1,-2)

SAMPLE

Total Qns:45

BTECH SAMPLE QUESTION PAPER

Max Marks: 100
Duration : 70 min

12.	**If A=** $\begin{bmatrix} 2 & 3 \\ 3 & 5 \end{bmatrix}$ **then** A^{-1} **is** **(A)** $\begin{bmatrix} -5 & 3 \\ 3 & -2 \end{bmatrix}$ **(B)** $\begin{bmatrix} 5 & -3 \\ -3 & 2 \end{bmatrix}$ **(C)** $\begin{bmatrix} 3 & 2 \\ 5 & 3 \end{bmatrix}$ **(D)** $\begin{bmatrix} 3 & 5 \\ 2 & 3 \end{bmatrix}$
13.	**Which of the following is greatest?** **(A)** $\frac{2}{7}$ **(B)** $\frac{2}{15}$ **(C)** $\frac{1}{4}$ **(D)** 0.17
14.	**Two boys start from the same place walking at the rate of 5 kmph and 5.5 kmph respectively in the same direction. What time will they take to be 8.5 km apart?** **(A)** 17 hr **(B)** 14 hr **(C)** 12 hr **(D)** 19 hr
15.	**The equation of circle drawn on the diagonal of the rectangle as its diameters whose sides are** $x = 6, x = -3, y = 3, y = -1$ **is,** **(A)** $x^2 + y^2 - 3x - 2y + 21 = 0$ **(B)** $x^2 + y^2 - 3x + 2y + 21 = 0$ **(C)** $x^2 + y^2 + 3x - 2y + 21 = 0$ **(D)** $x^2 + y^2 - 3x - 2y - 21 = 0$
16.	$If\ y = \sin(x^2 + x)\ then\ \frac{dy}{dx} =$ **(A)** $-(2x+1)\sin(x^2+x)$ **(B)** $(2x+1)\sin(x^2+x)$ **(C)** $-(2x+1)\cos(x^2+x)$ **(D)** $(2x+1)\cos(x^2+x)$
17.	**The foci of the hyperbola** $4x^2 - 9y^2 - 36 = 0$ **are** **(A)** $(\pm\sqrt{13}, 0)$ **(B)** $(\pm\sqrt{11}, 0)$ **(C)** $(\pm\sqrt{12}, 0)$ **(D)** $(0, \pm\sqrt{12})$
18.	$\int \frac{sinxcosx}{1 + cos2x}\, dx = ?$ **(A)** $\log(1 + cos2x) + c$ **(B)** $\frac{1}{2}\log(cosx) + c$ **(C)** $-\frac{1}{2}\log(cosx) + c$ **(D)** $\frac{1}{4}\log(cosx) + c$

SAMPLE

19.	**A room has three sockets. A person selects 3 bulbs at random from a collection of 15 bulbs of which 5 are defective and puts them into the sockets, the probability that there will be light from all the three bulbs is,** **(A)** $\frac{24}{91}$ **(B)** $\frac{67}{91}$ **(C)** $\frac{89}{91}$ **(D)** $\frac{47}{91}$
20.	**In how many ways can the letters of the word 'LEADER' be arranged?** **(A)** 72 **(B)** 144 **(C)** 360 **(D)** 720
21.	**A kite is flying at an inclination of 60^0 with the horizontal. If the length of the thread is 120 m then the height of the kite is** **(A)** $60\sqrt{3}$ m **(B)** 60 m **(C)** $\frac{60}{\sqrt{3}}$m **(D)** 120 m
22.	**If $\bar{a} = \mathbf{i} - 2\mathbf{k}$, $\bar{b} = -3\mathbf{i} + 5\mathbf{k}$, $\bar{c} = 2\mathbf{i} - 7\mathbf{k}$ and $\bar{c} = x\,\bar{a} + y\,\bar{b}$ then x and y are respectively** **(A)** 3 , 11 **(B)** 11 , 3 **(C)** 11 , 4 **(D)** 11 , 5

SECTION C: SCIENCE **(12 x 2 = 24)**

23.	**Two blocks of ice when pressed together join to form one block because** **(A)** of cold produced during pressing **(B)** of heat produced during pressing **(C)** melting point of ice decreases with increase in pressure **(D)** melting point of ice decreases with decrease in pressure
24.	**Which of the following only produce virtual images? (Assuming s > 0)** **(A)** converging lenses and concave mirrors **(B)** diverging lenses and concave mirrors **(C)** converging lenses and convex mirrors **(D)** diverging lenses and convex mirrors
25.	**A body of mass 10 kg and velocity 10m/s collides with a stationary body of mass 5 kg. After collision, both bodies stick to each other. The common velocity would be** **(A)** 3/20 m/s **(B)** 20/3 m/s **(C)** 10/3 m/s **(D)** 3/10 m/s
26.	**Ultrasonics are used in SONAR with greater advantage because ultrasonics,** **(A)** have low frequency **(B)** have short wavelength

SAMPLE

	(C)	are electromagnetic waves	**(D)**	can be easily produced
27.	**The surface tension of a liquid is 70 dyne / cm. In MKS system its value is**			
	(A)	$70\ \frac{N}{m}$	**(B)**	$7 \times 10^{-2}\ \frac{N}{m}$
	(C)	$7 \times 10^{2}\ \frac{N}{m}$	**(D)**	$7 \times 10^{3}\ \frac{N}{m}$
28.	**A ball is dropped on the ground from a height of 1m. The coefficient of restitution is 0.6.The height to which the ball will rebound is**			
	(A)	0.6m	**(B)**	0.4m
	(C)	0.36m	**(D)**	0.16m
29.	**Which statement is wrong about chloroform:**			
	(A)	Chloroform is used as anaesthetic	**(B)**	Chloroform has distorted shape
	(C)	Chloroform is used as a solvent	**(D)**	chloroform has sp^2-hybridised carbon atom
30.	**27 g of Al (at mass=27)will react with oxygen equal to**			
	(A)	24 g	**(B)**	8 g
	(C)	40 g	**(D)**	10 g
31.	**Sodium chloride is an ionic compound whereas hydrogen chloride is a gas because**			
	(A)	Sodium is reactive	**(B)**	Covalent bond is weaker than ionic bond
	(C)	Hydrogen chloride is a gas	**(D)**	Covalent bond is stronger than ionic bond
32.	**Which of the order for ionization energy is correct**			
	(A)	Be>B>C>N>O	**(B)**	B<Be<C<O<N
	(C)	B <Be<C<N<O	**(D)**	B<Be<N<C<O
33.	**I mole of a compound contain 1 mole of C and 2 moles of O. The molecular weight is,**			
	(A)	3	**(B)**	12
	(C)	32	**(D)**	44
34.	**Which of the nitrates on strong heating leaves the metal as the residue?**			
	(A)	AgNO3	**(B)**	Pb(NO3)2
	(C)	Cu(NO3)2	**(D)**	Al(NO3)3

SECTION D: ENGLISH

Q. Fill in the blanks with most suitable word(s) given below. (10 x 2 = 20)

35.	**Right now I _____ in front of a computer, trying to do an exercise about tenses.**			
	(A)	sit	**(B)**	am sit
	(C)	sitting	**(D)**	am sitting
36.	**Last night at seven o'clock Radha _____ dinner with her family.**			

SAMPLE

	(A)	had	**(B)**	has had
	(C)	was having	**(D)**	was had
37.	**I'm sorry I missed your call. I _____ a shower and I simply didn't hear the phone ring.**			
	(A)	had	**(B)**	was having
	(C)	had had	**(D)**	had been having
38.	**Look! The sun ------ over the hills.**			
	(A)	rises	**(B)**	is rise
	(C)	is rising	**(D)**	will rise
39.	**All my friends are glass-____-full people. I guess that's why they always manage to cheer me up when I get depressed.**			
	(A)	nearly	**(B)**	barely
	(C)	half	**(D)**	under
40.	**_____you like one more drink?**			
	(A)	Might	**(B)**	Would
	(C)	Could	**(D)**	Should
41.	**You can't understand it, ____you?**			
	(A)	can	**(B)**	do
	(C)	could	**(D)**	don't
42.	**I am so tired _____ I cannot go on.**			
	(A)	also	**(B)**	and
	(C)	even	**(D)**	that
43.	**_____! What are you doing there?**			
	(A)	Hush	**(B)**	Hello
	(C)	Hurrah	**(D)**	Alas
44.	**We travelled ____train.**			
	(A)	by	**(B)**	through
	(C)	in	**(D)**	from

LETTER WRITING **(12 X 1 = 12)**

45.	**Write a complaint letter to the Police Commissioner of Traffic, about inadequate parking facility in your area.**

======== ALL THE BEST =========

SAMPLE