

## BEL Technical Question Paper

1. What is the resolution of a digital-to-analog converter (DAC)?

- A. It is the comparison between the actual output of the converter and its expected output.
- B. It is the deviation between the ideal straight-line output and the actual output of the converter.
- C. It is the smallest analog output change that can occur as a result of an increment in the digital input.
- D. It is its ability to resolve between forward and reverse steps when sequenced over its entire range.

Ans:C

2. Mod-6 and mod-12 counters are most commonly used in:

- A. frequency counters
- B. multiplexed displays
- C. digital clocks
- D. power consumption meters

Ans:C

3. A series of gradually decreasing sine wave oscillations is called:

- A. Ringing
- B. slew
- C. overshooting
- D. undershooting

Ans:A

4. Pinch-off voltage  $V_P$  for an FET is the drain voltage at which

- A. significant drain current starts flowing
- B. drain current becomes zero
- C. all free charges get removed from the channel
- D. avalanche break down takes place

Ans:C

5. Compared to bipolar transistor, a JFET has
- A. lower input impedance
  - B. higher voltage gain
  - C. higher input impedance and high voltage gain
  - D. higher input impedance and low voltage gain

Ans:D

6. A common instrument used in troubleshooting a digital circuit is a(n) \_\_\_\_\_.
- A. logic probe
  - B. oscilloscope
  - C. pulser
  - D. all of the above

Ans:D

7. How many valence shell electrons are there in semiconductor atoms?
- A. 16
  - B. 8
  - C. 4
  - D. 2

Ans:C

8. Kirchhoff's current law for parallel circuits states that the:
- A. sum of all branch voltages equals zero
  - B. total circuit resistance is less than the smallest branch resistor
  - C. sum of currents into a junction is equal to the difference of all the branch currents
  - D. sum of the total currents flowing out of a junction equals the sum of the total currents flowing into that junction

Ans:D

9. A parallel circuit is also used as a divider for:
- A. Conductance
  - B. voltage
  - C. power
  - D. current

Ans:D

10. What is a characteristic of a secondary cell?

- A. rechargeability
- B. not rechargeable
- C. a dry cell
- D. non-liquid

Ans:A

11. Telex is a

- A Telephone Service between various subscribers
- B Tele printer Service between various subscribers
- C Television Service between various subscribers
- D Telegraph Service between various subscribers

Ans: B

12. Data can be changed from special code to temporal code by using

- A. Shift registers
- B. counters
- C. Combinational circuits
- D. A/D converters.

Ans: A

13. In digital ICs, Schottky transistors are preferred over normal transistors because of their

- A. Lower Propagation delay.
- B. Higher Propagation delay.
- C. Lower Power dissipation.
- D. Higher Power dissipation.

Ans: A

14. Which TTL logic gate is used for wired ANDing

- A. Open collector output
- B. Totem Pole
- C. Tri state output
- D. ECL gates

Ans: A

15. The number of point to point links required in a fully connected network for 50 entities is

- A. 1250
- B. 1225
- C. 2500
- D. 50

Ans: C

16. Telephone companies normally provide a voltage of \_\_\_\_\_ to power telephones.

- A. +24 volts DC
- B. -24 volts DC
- C. +48 volts DC
- D. -48 volts DC.

Ans: D

17. The situation when both transmitter and receiver have to work in tandem is referred to as

- A. parallel
- B. serial
- C. synchronous
- D. asynchronous

Ans: C

18. The \_\_\_\_\_ is a circuit-switched network, while the \_\_\_\_\_ is a packet-switched network.

- A. Telephone, ATM
- B. SONET and FDDI
- C. Satellite, Telephone
- D. FDDI and SONET

Ans: A

19. ISDN handles data pertaining to

- A. All digital services
- B. Speech and Video
- C. Computer data only
- D. Speech only

Ans:A

20. Typical human voice is centered around \_\_\_\_\_ Hz.

- A. 200-400
- B. 280-3000
- C. 400-600
- D. 1400-1800

Ans: B

BEL General Aptitude

1.The smallest value of  $m$ , for which  $2m+1$  is not a prime number, is:

- A. 3
- B. 4
- C. 5

D. 6

Ans:4

2.The sum of the first 47 terms of the series  $\frac{1}{4} + \frac{1}{5} - \frac{1}{6} - \frac{1}{4} - \frac{1}{5} + \frac{1}{6} + \frac{1}{4} + \frac{1}{5} - \frac{1}{6}$  is:

A. 0

B.  $\frac{1}{6}$

C.  $\frac{1}{6}$

D. 1

Ans:B

3. $(?5+?3)/(?5-?3)$  is equal to :

A. 1

B. 2

C.  $4-?15$

D.  $4+?15$

Ans:C

4. The height of an equilateral triangle is 10 cm. Its area is :

A.  $(100/3)\text{cm}^2$

B.  $30\text{ cm}^2$

C.  $100\text{ cm}^2$

D.  $(100/?3)\text{cm}^2$

Ans:D

5. 1, 6, 24, 60, 120, 210

A. 336

B. 366

C. 330

D. 660

Ans: A. 336

6. A cylindrical container has a radius of eight inches with a height of three inches. Compute how many inches should be added to either the radius or height to give the same increase in volume?

A. 13

B.  $16/3$

C.  $11/3$

D.  $17/3$

Ans: B.  $16/3$  inches

Explanation : Let  $x$  be the amount of increase. The volume will increase by the same amount if the radius increased or the height is increased.

So, the effect on increasing height is equal to the effect on increasing the radius.

$$\text{i.e., } (22/7) * 8 * 8 * (3+x) = (22/7) * (8+x) * (8+x) * 3$$

Solving the quadratic equation we get the  $x = 0$  or  $16/3$ . The possible increase would be by  $16/3$  inches.

7. 39% of a number exceeds 19% of the same by 48. What is the number ?

A. 180

B. 260

C. 240

D. 280

Ans: C

8. How big will an angle of one and a half degree look through a glass that magnifies things three times?

A.  $1 \frac{1}{2}$

B.  $2 \frac{1}{2}$

C.  $3\frac{1}{2}$

D.  $4\frac{1}{2}$

Ans: A.  $1\frac{1}{2}$  degrees

Explanation : The magnifying glass cannot increase the magnitude of an angle.

9. 12 men take 36 days to do a work while 12 women complete  $\frac{3}{4}$  th of the same work in 36 days. In how many days 10 men and 8 women together will complete the same work?

A. 6

B. 27

C. 12

D. Data inadequate

Ans: B

10. A is the son of C; C and Q are sisters; Z is the mother of Q and P is the son of Z. Which of the following statements is true?

A. P and A are cousins

B. P is the maternal uncle of A

C. Q is the maternal grandfather of A

D. C and P are sisters

Ans: B

Explanation: C and Q are sisters and A is the son of C. Hence, C is the mother of A or Z is the mother Q. Hence, Z is the maternal grandmother of A. P is the son of Z. Hence, P is the maternal uncle of

11. The total number of digits used in numbering the pages of a book having 366 pages is

A. 732

B. 990

C. 1098

D. 1305

Ans: B



Explanation: Total number of digits= (No. of digits in 1- digit page nos. + No. of digits in 2-digit page nos. + No. of digits in 3- digit page nos.)

$$= (1 \times 9 + 2 \times 90 + 3 \times 267) = (9 + 180 + 801) = 990$$

12. Nitin's age was equal to square of some number last year and the following year it would be cube of a number. If again Nitin's age has to be equal to the cube of some number, then for how long he will have to wait?

- A. 10
- B. 38
- C. 39
- D. 64

Ans:B

Explanation: Clearly, we have to first find two numbers whose difference is 2 and of which the smaller one is a perfect square and the bigger one a perfect cube.

Such numbers are 25 and 27.

Thus, Nitin is now 26 years old. Since the next perfect cube after 27 is 64,

so required time period = (64 - 26) years = 38 years.

13. QAR, RAS, SAT, TAU, \_\_\_\_\_

- A. UAV
- B. UAT
- C. TAS
- D. TAT

Ans:A

Explanation: In this series, the third letter is repeated as the first letter of the next segment. The middle letter, A, remains static. The third letters are in alphabetical order, beginning with R.

14.If  $9+3-5=32$ ,  $11+6-4=70$ , then  $18+2-4=?$

- A. 54
- B. 36
- C. 40

D.56

Ans:C

15.School is related to Education in the same way as court is related to

A. Lawyer

B. Criminal

C. Justice

D.Jugde

Ans:C