

## BEL Sample Paper Questions

1. Transition capacitance  $C_t$  of a Varicap diode with Knee voltage  $V_t$ , reverse voltage  $V_r$  and  $K$ , the constant based on semiconductor material and the construction technique &  $N$  dependent on type of junction is given by

a.  $1 / K (V_t + V_r)^{N/2}$

b.  $1 / K (V_t + V_r)^N$

c.  $K / (V_t + V_r)^N$

d.  $K / (V_t + V_r)^{1/N}$

Answer : c

2.  $C_t = K / (V_t + V_r)^N$  where  $V_t$  Knee voltage,  $V_r$  reverse voltage,  $K$  manufacturing dependent constant and  $N$  dependent on type of junction, for alloy junction the value of  $N$  is

a.  $1/3$

b.  $2/3$

c.  $1/2$

d. 1/4

Answer : c

3. The distortion less output characteristic of a network means

a. Constant amplitude and linear phase shift over frequency

b. Linear phase shift and amplitude need not be constant

c. Any amplitude and phase

d. None of these

Answer : a

4. Single sideband means suppressed

a. Carrier

b. Carrier and one side band

c. One side band

d. None of these

Answer : b

5. In an amplitude modulated signal, lower side band frequency is equal to (if the carrier frequency is  $f_c$  and modulation frequency is  $f_m$ )

a.  $f_m + f_c$

b.  $f_c - f_m$

c.  $f_m - f_c$

d.  $f_c / f_m$

Answer : b

6. The noise figure of a receiver is a measure of:

1. Excess noise generated

2. Bandwidth of the receiver

3. Gain of the receiver

4. Operating frequency

Answer :1

7. The ratio receiver is:

1. Direct detection type

2. Super regenerative type

3. Super heterodyne type

4. None of these

Answer : 3

8. In an amplitude modulation system, the modulation index is dependent upon:

1. Modulating frequency only
2. Carrier amplitude only
3. Modulating signal amplitude only
4. Modulating and carrier amplitudes only

Answer : 2

9. Image rejection mixer is generally used:

1. To reject the unwanted signal
2. To improve signal amplitude
3. To improve noise figure
4. To improve conversion loss

Answer : 3

10. The value of a resistor creating thermal noise is doubled. The noise power generated is therefore:

1. Halved
2. Quadrapuled
3. Doubled
4. Unchanged

Answer : 2

11.  $C_t = K / (V_t + V_r)N$  where  $V_t$  Knee voltage,  $V_r$  reverse voltage,  $K$  manufacturing dependent constant and  $N$  dependent on type of junction, for diffused junction the value of  $N$  is

- a.  $1/3$
- b.  $2/3$
- c.  $1/2$
- d.  $1/4$

Answer : a

12. In JFET, the drain current  $I_d$  is given by ( $I_{DSS}$  drain source saturation current  $V_{GS}$  Gate source voltage,  $V_p$  the pinch off voltage)

a.  $I_{DSS}[1 - V_p/V_{GS}]$

b.  $I_{DSS}(1 - V_{GS}/V_p)^2$

c.  $I_{DSS}[1 - V_{GS}/V_p]$

d.  $I_{DSS}(1 - V_{GS}/V_p)^{3/2}$

Answer : b

13. The shadow mask in colour tube is used to

a. Reduce X-Ray emission

b. Ensure each beam hits its own dots

c. Increase screen brightness

d. Provide degaussing for the screen

Answer : b

14. Indicate which of the following signal is not transmitted in colour TV

a. Y

b. Q

c. R

d. I

Answer : c

15. Another name for horizontal retrace in TV receiver is the

a. Ringing

b. Burst



c. Damper

d. Fly back

Answer : d

16. Another name for the colour sync in the colour TV system

a. Ringing

b. Burst

c. Damper

d. Fly back

Answer : b

17. The HV anode supply for a picture tube of a TV receiver is generated in the

a. Mains transformer

- b. Vertical output stage
- c. Horizontal output stage
- d. Horizontal oscillator

Answer : c

18. The output of vertical amplifier is

- a. Direct current
- b. Amplified vertical sync pulse
- c. A saw tooth voltage
- d. A saw tooth current

Answer : d

19. In a transistor if  $\alpha = 0.98$ , current gain is equal to

a. 29

b. 59

c. 69

d. 49

Answer : d

20. The active region in the common emitter configuration means

a. Both collector and emitter junction is reverse biased

b. The collector junction is forward biased and emitter junction

c. The collector junction is reverse biased and emitter junction is forward biased

d. Both collector & emitter junction are forward biased

Answer : c

21. The saturation region in the common emitter configuration means that

- a. Both collector & emitter junction are reverse biased
- b. The collector junction is forward biased and emitter junction
- c. The collector junction is reverse biased and emitter junction is forward biased
- d. Both collector & emitter junction are forward biased

Answer : d

22. The % of Red, Green & Blue in 100% White Y is given by

- a. 30%, 59%, 11%
- b. 50%, 30%, 11%
- c. 30%, 11%, 50%
- d. 33.3%, 33.5%, 38.3%

Answer : a

23. Equalizing pulse width, if H is the Horizontal sync rate

a.  $0.64 H$

b.  $0.07 H$

c.  $0.04 H$

d.  $0.16 H$

Answer : c

24. In a simple RC network the bandwidth is equal to

a.  $1/2 p RC$

b.  $RC / 2$

c.  $2 C / p R$

d.  $2 p / RC$

Answer : a

25. The time constant of a RC network is given by

- a. RC
- b. C/R
- c. R/C
- d. None of these

Answer : d

26. First zero crossing of pulse frequency spectrum occurs at if d is the pulse width, T is the pulse repetition rate

- a.  $1/d$
- b.  $d/T$
- c.  $T/d$

d. T

Answer : a

27. Indicated the false statement:

1. HF mixer are generally noisier than HF amplifier
2. Impulse noise voltage is independent of bandwidth
3. Thermal noise is independent of the frequency at which it is measured
4. Industrial noise is usually of the impulse type

Answer : 2

28. If the carrier of a 100 percent modulated AM wave is suppressed the percentage power saving will be:

- a. 50
- b. 70

c. 100

d. 66.6

Answer : d

29. A balanced modulator produces:

1. The carrier and Two side bands

2. The carrier and one side band

3. Two side bands alone

4. Carrier and a number of side bands

Answer : 3

30. The frequency deviation in FM system is proportional to:

1. Modulating frequency



2. Carrier amplitude

3. Modulating signal amplitude

4. None of these

Answer : 3

31. In FM, the total transmitted power is:

1. Dependent on modulating signal amplitude

2. Dependent on modulating frequency

3. Dependent on modulating index

4. Independent of the above

Answer : 4

32. A quarter wave line when short circuited at the far end behaves like

1. Pure inductor
2. Pure capacitor
3. Parallel tuned circuit
4. Series tuned circuit

Answer : 3

33. The stub line used to match transmission line with a given load impedance is generally

1. Another open circuited line
2. Another short circuited line
3. Quarter wave transmission line
4. Half wave transmission line

Answer : 2

34. The smith chart generally covers a distance of

1. Quarter wavelength
2. Half wavelength
3. One wavelength
4. Twice the wavelength

Answer : 2

35. The component generally used to sample a portion of the energy transmitted in a line is

1. Isolator
2. Circulator
3. Directional coupler
4. None of these

Answer : 3

36. The return loss in a transmission line is a measure of

1. Loss of the line
2. Standing wave ratio
3. Characteristic impedance of the line
4. None of these

Answer : 2

37. The antenna can be considered as

1. Matching the source and free space
2. Matching the source to the line
3. Matching the line and free space
4. None of these\

Answer : 3

38. The free space impedance is approximately equal to

1. 177 W

2. 277 W

3. 377 W

4. 50 W

Answer : 3

39. The polarization refers to

1. The physical orientation of the radiated wave

2. The directional of propagation of the wave

3. Direction perpendicular to the propagation of the wave

4. None of these

Answer : 3

40. If  $\mu$  &  $\epsilon$  are the permeability and permittivity respectively the characteristic impedance of the medium is given by

a.  $\mu\epsilon$

b.  $\sqrt{\mu/\epsilon}$

c.  $\sqrt{\epsilon/\mu}$

d.  $\sqrt{\mu\epsilon}$

Answer : 2

41. The power density at distance  $r$  from an isotropic radiator with transmitted power  $P$  is:

1.  $P/r^2$

2.  $P/2\pi r^2$

3. P/4 p r2

4. None of these

Answer : 3

42. The carrier in an FM system disappears for the lowest modulation index of:

a. 0.5

b. 1.0

c. 2.4

d. 3.5

Answer : c

43. The difference between phase and frequency modulation:

1. Is purely theoretical because they are the same in practice

2. Is too great to make the two systems compatible
3. Lies in the poorer audio response of phase modulation
4. Lies in the different definition of the modulation index

Answer : 4

44. The overall noise figure of two cascaded amplifiers is equal to

1. The algebraic sum of the two
2. The sum of the squares of the two
3. The square root of the product of the two
4. None of these

Answer : 4

45. The noise power output of an amplifier is equal to:



1.  $K T_0 B F G$

2.  $K T_0 F G$

3.  $K T_0 F / G$

4.  $K T_0 / F G$

Answer : 1

46. The effective noise temperature of an amplifier is equal to

1.  $(F + 1) T_0$

2.  $F T_0$

3.  $(F - 1) T_0$

4. None of these

Answer : 3

47. The noise figure of an amplifier depends upon

1. Its bandwidth
2. Its gain
3. Its operating frequency
4. None of these

Answer : 4

48. The velocity of electromagnetic wave in a coaxial cable is

1. Equal to the velocity in free space
2. Less than the velocity in free space
3. Greater than the velocity in free space
4. None of these

Answer : 2

49. The standing wave ratio [SWR] in a transmission line:

1. Is proportional to the load impedance
2. Is dependent on the source impedance
3. Is a mis-match between the load and line
4. Is a measure of its power handling capability

Answer : 3

50. The standing wave ratio (SWR) is unity in a transmission line if

1. The load impedance is equal to the characteristic impedance of the line
2. The load impedance is twice that of the characteristic impedance
3. The load impedance is half of the characteristic impedance of the line
4. None of these

Answer : 1

51. The standing wave voltage node along a line repeats at the rate of if  $L$  is the wave length

a.  $L/4$

b.  $L/2$

c.  $L$

d.  $2L$

Answer : 2

52. FM modulation becomes equivalent to AM modulation if

1. FM index is greater than 1

2. FM index is equal to 1

3. FM index is very much less than 1

4. FM index less than or equal to 1

Answer : 3

53. S/N improvement of FM over AM, B is the FM modulation index

a.  $3B^2$

b. B

c.  $2B$

d.  $B/2$

Answer : a

54. Picture transmission in TV employs

1. Suppressed carrier modulation

2. Vestigial side band

3. Single side band

4. None of these

Answer : 2

55. Sound transmission in TV employ

1. Amplitude modulation

2. Phase modulation

3. Frequency modulation

4. Pulse amplitude modulation

Answer : 3

56. One of the following is an indirect way of generating FM this is the:

1. Reactance FET modulator

2. Varacter divide modulator
3. Amstrong modulator
4. Reactance bipole transistor modulator

Answer : 3

57. The modulation index of AM wave is changed from 0 to 1. The transmitted power is

1. Un-changed
2. Halved
3. Doubled
4. Increased by 50%

Answer : 4

58. The isotropic antenna is represented by

1. Dipole antenna
2. Rhombic antenna
3. Yagi uda antenna
4. No such antenna exists in practice

Answer : 4

59. The gain of parabolic reflector antenna is proportional to

1. The diameter of the reflector
2. Square of the diameter of the reflector
3. Aperture area of the feed
4. None of these

Answer : 2



60. The parabolic reflector antenna are generally used to

1. Provide high gain
2. Provide pencil beam
3. Increase bandwidth of operation
4. None of these

Answer : 2

61. Cassegrain feed is used with a parabolic reflector to

1. Increase gain of the system
2. Increase the bandwidth of the system
3. Reduce the size of the main reflector
4. Allow the feed to be placed at a convenient point

Answer : 4

62. A helical antenna is used for satellite tracking because of its

1. Circular polarization
2. Maneuverability
3. Broad bandwidth
4. Good front to back ratio

Answer : 1

63. The disccone antenna is

1. A useful direction finding antenna
2. Used as a radar receiving antenna
3. Circularly polarized like other circular antenna
4. Useful as a VHF receiving antenna

Answer : 4

64. Waveguides are used mainly for microwave signals because

1. They depend on straight line propagation which applies to microwaves only
2. Losses would be too heavy at lower frequencies
3. There are no generators powerful enough to excite them at lower frequencies
4. They would be too bulky at lower frequencies

Answer : 4

65. The wavelength in a waveguide

1. Is greater than in free space
2. Depends only on the waveguide dimensions and the free-space wavelength
3. Less than the free space wavelength

4. Equal to the free space wavelength

Answer : 1

66. The dominant mode of propagation is preferred with rectangular waveguide because(indicate false statement)

1. It leads to the smallest waveguide dimensions
2. The resulting impedance can be matched directly to coaxial lines
3. It is easier to excite than the other modes
4. Propagation of it without any spurious generation can be ensured

Answer : 2

67. The velocity of propagation (group velocity) in a waveguide is

1. Less than the free space velocity
2. Greater than the free space velocity

3. Equal to be free space velocity

4. None of these

Answer : 1

68. A wave can propagate in a waveguide if its cut off wavelength is

1. Greater than the free space wavelength

2. Less than the free space wavelength

3. Equal to be free space wavelength

4. None of these

Answer :3

69. The dominant mode in a rectangular waveguide is

a. TE<sub>11</sub>

b. TE<sub>10</sub>

c. TE<sub>20</sub>

d. TM<sub>11</sub>

Answer : 2

70. The characteristic wave impedance of a waveguide

1. Depends on the mode of propagation
2. Does not depend on the mode of propagation
3. Is same as the free space impedance
4. None of these

Answer : 1

71. A choke flange may be used to couple two waveguides

1. To help in the alignment of the waveguides
2. Because it is simpler than any other joint
3. To compensate the discontinuities at the joint
4. To increase the bandwidth of the system

Answer : 2

72. Frequencies in the UHF range is normally propagated by means of

1. Ground waves
2. Sky waves
3. Surface waves
4. Space waves

Answer : 4

73. As electromagnetic waves travel in free space, only one of the following can happen to them

1. Absorption
2. Attenuation
3. Reflection
4. Refraction

Answer : 2

74. High frequency waves are

1. Absorbed by the F2 layer
2. Reflected by the D layer
3. Affected by the solar cycle
4. Capable of use for long distance communications on the moon

Answer : 3



75. Indicate which one of following terms applies to troposcatter propagation

1. SIDS
2. Fading
3. Fraday rotation
4. Atmospheric storms

Answer : 2

76. When microwave signals follow the curvature of the earth, this in known as

1. Faraday effect
2. Ducting
3. Ionospheric reflection
4. Tropospheric scattering

Answer : 2

77. An ungrounded antenna near the ground:

1. Is unlikely to need an earth mat
2. Acts as a single antenna of twice the height
3. Must be horizontally polarized
4. Acts as an antenna array

Answer : 4

78. One of the following consists of non-resonant antenna:

1. The folded dipole
2. The rhombic antenna
3. The end fire array

4. The broad side array

Answer : 2

79. Balun is:

1. A circuit element to connect balance line to unbalanced antenna or line:
2. A circuit element to connect balance line to balanced line
3. A circuit element to connect unbalance line to unbalanced line
4. None of these

Answer : 1

80. The slotted line is used to measure:

1. Standing wave ratio
2. Load impedance

3. Source impedance

4. None of these

Answer : 1

81. In amplitude modulation  $E_c (1 + m \sin Wmt) \sin Wot$ , each side band amplitude will be:

1.  $E_c/2$

2.  $E_c$

3.  $E_c/m$

4.  $2E_c/m$

Answer : 1

82. The dominant mode in a circular waveguide is

a. TE<sub>01</sub>

b.TE11

c.TM01

d.TM11

Answer : 3

83. A ferrite is

1. A non-conductor with magnetic properties
2. An inter metallic compound with particularly good conductivity
3. An insulator which heavily attenuates magnetic fields
4. A microwave semiconductor invented by farady

Answer : 1

84. The maximum power that may be handled by a ferrite component is limited by the

1. Curie temperature
2. Saturation magnetization
3. Line width
4. Gyro magnetic resonance

Answer : 1

85. The isolator is

1. Bidirectional
2. Unidirectional
3. Used to tap the power in a waveguide transmission line
4. Used for None of these of the above

Answer : 2

86. Isolator is generally used:

1. To protect the high power transmitter
2. To protect receiver
3. To protect the antenna
4. To avoid arcing in waveguides

Answer : 1

87. A TR tube is used

1. To protect the high power transmitter
2. To protect receiver
3. To avoid arcing in waveguides
4. For None of these of the above

Answer : 2

88. Rieke diagrams are used to select best operating conditions for

1. TWT amplifier
2. Klystron oscillator
3. Magnetron oscillator
4. Cross field amplifiers

Answer : 3

89. The gain bandwidth product of a microwave transistor FT, is the frequency at which the

1. Alpha of the transistor falls by 3 dB
2. Beta of the transistor falls by 3 dB
3. Beta of the transistor falls to unity
4. Power gain of the transistor falls to unity



Answer : 1

90. The cavity magnetron uses strapping to

1. Prevent mode jumping
2. Prevent cathode-back heating
3. Ensure bunching
4. Improve the phase-focussing effect

Answer : 4

91. The transferred electron bulk effect occurs in

1. Germanium
2. Gallium arsenide
3. Silicon

4. Metal semiconductor junction

Answer : 2

92. One of the following is not used as a microwave mixer or detector

1. Crystal diode

2. Schottky barrier diode

3. Backward diode

4. PIN diode

Answer : 4

93. SAW devices may be used as:

1. transmission media like stripline

2. filters

3. UHF amplifiers

4. Oscillators at millimeter frequencies

Answer : 2

94. Surface acoustic waves propagate in:

1. Gallium arsenide

2. Indium phosphide

3. Stripline

4. Quartz crystal

Answer : 4

95. A parametric amplifier has an input and output frequency of 2.25 GHz, and is pumped at 4.5 GHz is a

1. Traveling wave amplifier

2. Degenerate amplifier
3. Lower-side band up converter
4. Upper-side band up converter

Answer : 2

96. The negative resistance in a tunnel diode

1. Is maximum at the peak point of the characteristic
2. Is available between the peak and valley points
3. Is maximum at the valley point
4. May be improved by the reverse bias

Answer : 2

97. Microwave links repeaters are typically 50KM apart

1. Because of atmospheric attenuation
2. Because of output tube power limitations
3. Because of Earth's curvature
4. To ensure that the applied voltage is not excessive

Answer : 3

98. Microwave links are generally preferred to coaxial for television transmission because

1. They have less overall phase distortion
2. They are cheaper
3. Of their greater bandwidths
4. Of their relative immunity to impulse noise

Answer : 1

99. A geostationary satellite

1. Is motionless in space(except for its spin)
2. Is not really stationary at all, but orbits the earth with a 24 hour period
3. Appears stationary over Earths magnetic pole
4. Is located at a height of 35800KM to ensure global coverage

Answer : 2

100. The geostationary satellite launched by India are called

1. INTELSAT
2. INSAT
3. COMSAT
4. MARISAT

Answer : 2

101. After a target has been acquired the best scanning system for tracking is

1. Nodding
2. Spiral
3. Conical
4. Helical

Answer : 3

102. The Doppler frequency increases as the target

1. Approaches the radar
2. Recedes the radar
3. Moves perpendicular to the beam
4. Does not depend on the target velocity

Answer : 1

103. The Doppler effect is used in (indicate the false statement)

1. Moving target plotting on the PPI
2. MTI system
3. FM Radar
4. CW Radar

Answer : 1

104. Solution to the blind speed problem is to

1. Change the Doppler frequency
2. Vary the PRF
3. Use monopulse



4. Use MTI

Answer : 2

105. The A-scope displays

1. Target position and range
2. Target range but not position
3. Target position but not range
4. Neither range nor position but only velocity

Answer : 2

106. In the colour television system the sub carrier frequency in MHz is approximately

a. 3.58

b.4.5

c. 45.75

d. 5.58

Answer : a

107. In television 4: 3 : represents

1. The interlace ratio
2. The maximum horizontal deflection
3. Aspect ratio
4. The ratio of the two diagonals of picture tube

Answer : 3

108. Equalizing pulses in TV are sent during the:

1. Horizontal blanking

2. Vertical blanking

3. The serrations

4. Horizontal retrace

Answer : 2

109. The number of lines per field in Indian television system is:

a. 625

b. 312.5

c. 525

d. 262.5

Answer : 2

110. The number of frames in Indian TV system is:

a. 50

b. 60

c. 25

d.30

Answer : a

111. In a TV receiver the colour killer:

1. Cuts off the chromastages during monochrome reception
2. Ensures that no colour is transmitted to monochrome receivers
3. Prevents colour overloading
4. Makes sure that the colour burst is not mistaken for sync pulses

Answer : 1

112. A parametric amplifier must be cooled

1. Because parametric amplification generates a lot of heat
2. To increase bandwidth
3. Because it cannot operate at room temperature
4. To improve the noise performance

Answer : 4

113. If the peak transmitted power in a Radar system is increased by a factor of 16, the maximum range will be increased by a factor of

- a. 2
- b. 4
- c. 8
- d. 16

Answer : d

114. Telephone traffic is measured

1. With echo
2. By relative congestion
3. In terms of the grade of service
4. In erlangs

Answer : 1

115. If the antenna diameter in a radar system is increased by a factor of 4, the maximum range will be increased by a factor of:

- a. 02
- b. 2
- c. 4
- d. 8

Answer : c

116. A high PRF will (indicate the false statement)

1. Make the returned echoes easier to distinguish from noise
2. Make target tracking easier with conical scanning
3. Increase the maximum range
4. Have no effect on the range resolution

Answer : 3

117. The bandwidth of a radar receiver is inversely proportional to the

1. Pulse width
2. Pulse repetition frequency
3. Pulse interval

4. Square root of the peak transmitted power

Answer : 1

118. If  $d$  is the pulse width,  $T$  is pulse repetition period and  $P$  is the peak power, the duty ratio is

a.  $T/d$

b.  $P/T$

c.  $P/d$

d.  $d/T$

Answer : d

119. If  $d$  is the duty ratio and  $P$  is the peak power in a pulsed transmitter, then the average power is

a.  $P.d$



b.  $P \cdot 2d$

c.  $P/d$

d.  $P/2d$

Answer : a

120. If the return echo arrives after the allocated pulse interval

1. It will interfere with operation of the transmitter
2. The receive might be overloaded
3. It will not be received
4. The target will appear closer than it really is

Answer : 4

ROUND 2

1 How many of the integers between 25 and 45 are even?

A) 21

B) 20

C) 11

D) 10

E) 9

2 If taxi fares were Rs.1.00 for the first  $\frac{1}{5}$  mile and Rs.0.20 for each  $\frac{1}{5}$  miles thereafter, the taxi fare for a 3-mile ride was

A) Rs.1.56

B) Rs.2.40

C) Rs.3.00

D) Rs.3.80

E) Rs.4.20

3. A computer routine was developed to generate two numbers (X, Y) the first being a random number between 0 and 100 inclusive, and the second being less than or equal to the square root of the first. Each of the following pairs satisfies the routine EXCEPT

A) (99.10)

B) (85.9)

C) (50.7)

D) (1.1)

E) (1.0)

4. A warehouse had a square floor with are 10,000 sq. metres. A rectangular addition was built along one entire side of the warehouse that increased the floor by one-half as much as the original floor. How many metres did the addition extend beyond the original building?

A) 10

B) 20

C) 50

D) 200

E) 500

5. A digital wristwatch was set accurately at 8.30 a.m. and then lost 2 seconds every 5 minutes. What time was indicated on the watch at 6.30 p.m. of the same day if the watch operated continuously that time?

A) 5:56

B) 5:58

C) 6.00

D) 6:23

E) 6:20

6. A 5 litre jug contains 4 litres of a saltwater solution that is 15 percent salt. If 1.5 litres of the solution spills out of jug, and the jug is then filled to capacity with water, approximately what percent of the resulting solution in the jug is salt?

A) .5%

B) 9.5%

C) 10.5%

D) 12%

E) 15%

7. It was calculated that 75 men could complete a piece of work in 20 days. When work was scheduled to commence, it was found necessary to send 25 men to another project. How much longer will it take to complete the work?

8. A student divided a number by  $\frac{2}{3}$  when he required to multiply by  $\frac{3}{2}$ . Calculate the percentage of error in his result.

9. A dishonest shopkeeper professes to sell pulses at the cost price, but he uses a false weight of 950gm. for a kg. His gain is %.

10. A software engineer has the capability of thinking 100 lines of code in five minutes and can type 100 lines of code in 10 minutes. He takes a break for five minutes after every ten minutes. How many lines of codes will he complete typing after an hour?

11. There are total 15 people. 7 speaks french and 8 speaks spanish. 3 do not speak any

language. Which part of total people speaks both languages?

Ans:  $\frac{1}{5}$

12. A jogger wants to save  $\frac{1}{4}$ th of his jogging time. He should increase his speed by how much %age?

Ans: 33.33 %

13.  $a$  is an integer. Dividing 89 & 125 gives remainders 4 & 6 respectively. Find  $a$  ?

Ans: 17

14. A Child is saying numbers 1, 2, 3, 4. When he says 1 Another child puts white marble in a box. On saying 2 he puts Blue marble and on saying 3 he puts red marble. When child says 4 other child take out white and blue marble. Child says some no. in a sequence then questions are based on the no. of marbles in the box. Like this

1,1,2,3,1, 4, 1,1,3,2,2,4,111

a) Find the no. of Blue marble in the box

b) Find the no. of White

c) No. of red marbles

15 A man crosses a circle of perimeter 35 m in 44 sec and he runs a hexagon of 42 m side. In how many second he finishes the complete perimeter of the hexagon?

16. A+b do a work in 6 days. A+c do the work in 10 days, c+a in 7.5 days. How many days will it take for a+b+c to do the work and also find the number of days required by a alone?

17. Complete the series 7 49 56 392.

18. A regular hexagon is inscribed in a circle. What is the perimeter of the hexagon in relation with the radius of the circle?

19. A circular path has a perimeter of 120m. a, b, c travel at 5 7 15m/s respectively. They start simultaneously. At what time do they meet next?

20. Totally there are 12 pipes. Some pipes fill the tank and some empties the tank (data will be given). If all the pipes are opened simultaneously when will the tank be filled?

21. Average age of 24 students is 36. When the age of teacher is added the average age is increased by 1 year. What is the age of the teacher?



22. Water and milk are mixed in the ratio 2:1,5:3 and 9:4. when all the mixtures of equal volume are mixed together what is the ratio water and milk in the resulting solution?

23. Average rate of five orange and four apples is 12 and 7 orange and 8 apples are 86. Find the total rate of 24 orange and 24 apples.

24. In how many ways the letters in the word MANAGEMENT can be arranged such that As does not come together?

25. A give B a start of 20 sec and leads by 20m. When he starts off 25 sec he finishes at the same time. What is the speed of A. (wordings not sure)?

25) A father has six children .all the children are born at regular intervals.if the sum of their ages of all the children and father is 186. calculate the age of the elder son, when the younger sons age is 3?

26. A man was engaged on a job for 30 days on the condition that he would get a wage of Rs. 10 for the day he works, but he have to pay a fine of Rs. 2 for each day of his absence. If he gets Rs. 216 at the end, he was absent for work for ... days.

27. A contractor agreeing to finish a work in 150 days, employed 75 men each working 8 hours daily. After 90 days, only  $\frac{2}{7}$  of the work was completed. Increasing the number of men by \_\_\_\_\_ each working now for 10 hours daily, the work can be completed in time.

28. Rs 50000 is divided into two parts

One part is given to a person with 10% interest and another part is given to a person with 20% interest. At the end of first year he gets profit 7000. Find money given by 10% ?

29. Time shown by a watch is 2.20. Find the angle between them ?

30. Avg cost of 5 apples + 4 mangoes = rs.36

Avg cost of 7 apples + 8 mangoes = rs.48

Find total cost of 24 mangoes and 24 apples?