## UNIVERSITY OF MYSORE Postgraduate Entrance Examination November - 2021 Postaduate Entrance Examinaion November 2021



QUESTION BOOKLET
(Read carefully the instructions given in the Question Booklet)

SUBJECT :
ELECTRONICS

MAXIMUM MARKS : 50
MAXIMUM TIME : 75 MINUTES
(Including time for filling O.M.R. Answer sheet)

## INSTRUCTIONS TO THE CANDIDATES

1. The sealed question paper booklet containing 50 questions enclosed with O.M.R. Answer Sheet is given to you.
2. Verify whether the given question booklet is of the same subject which you have opted for examination.
3. Open the question paper seal carefully and take out the enclosed O.M.R. Answer Sheet outside the question booklet and fill up the general information in the O.M.R. Answer sheet. If you fail to fill up the details in the form as instructed, you will be personally responsible for consequences arising during evaluating your Answer Sheet.
4. During the examination:
a) Read each question carefully.
b) Determine the Most appropriate/correct answer from the four available choices given under each question.
c) Completely darken the relevant circle against the Question in the O.M.R. Answer Sheet. For example, in the question paper if "C" is correct answer for Question No.8, then darken against SI. No. 8 of O.M.R. Answer Sheet using Blue/Black Ball Point Pen as follows:
Question No. 8. (A) (B) (D) (Only example) (Use Ball Pen only)
5. Rough work should be done only on the blank space provided in the Question Booklet. Rough work should not be done on the O.M.R. Answer Sheet.
6. If more than one circle is darkened for a given question, such answer is treated as wrong and no mark will be given. See the example in the O.M.R. Sheet.
7. The candidate and the Room Supervisor should sign in the O.M.R. Sheet at the specified place.
8. Candidate should return the original O.M.R. Answer Sheet and the university copy to the Room Supervisor after the examination.
9. Candidate can carry the question booklet and the candidate copy of the O.M.R. Sheet.
10. The calculator, pager and mobile phone are not allowed inside the examination hall.
11. If a candidate is found committing malpractice, such a candidate shall not be considered for admission to the course and action against such candidate will be taken as per rules.
12. Candidates have to get qualified in the respective entrance examination by securing a minimum of 8 marks in case of SC/ST/Cat-I Candidates, 9 marks in case of OBC Candidates and 10 marks in case of other Candidates out of 50 marks.

## INSTRUCTIONS TO FILL UP THE O.M.R. SHEET

1. There is only one most appropriate/correct answer for each question.
2. For each question, only one circle must be darkened with BLUE or BLACK ball point pen only. Do not try to alter it.
3. Circle should be darkened completely so that the alphabet inside it is not visible.
4. Do not make any unnecessary marks on O.M.R. Sheet.
5. Mention the number of questions answered in the appropriate space provided in the O.M.R. sheet otherwise O.M.R. sheet will not be subjected for evaluation.

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1) $\qquad$ is the voltage controlled device.
(A) UJT
(B) Diode
(C) BJT
(D) FET
2) In $\qquad$ the reactance is inversely proportional to the frequency.
(A) Inductor
(B) Capacitor
(C) Resistor
(D) Series combination of Resistor and Inductor
3) The tank circuit of a Hartley's oscillator consists of $\qquad$ .
(A) 3 resistors and 3 capacitors
(B) 2 inductors and one capacitor
(C) 2 capacitors and one inductor
(D) Series RLC circuit
4) At the cutoff region operating point of a transistor $\qquad$
(A) Voltage and current are $50 \%$ that of the respective maximum values
(B) Voltage is minimum and current is maximum
(C) Voltage is maximum and current is minimum
(D) Voltage and current are zero
5) Power amplifiers uses $\qquad$ coupling
(A) Direct
(B) Resistor
(C) Resistor Capacitor
(D) Transformer
6) The bubbled NOR gate is logically equivalent to $\qquad$
(A) OR gate
(B) NOT gate
(C) NAND gate
(D) AND gate
7) A mod 3 counter is used to count from
(A) 0 to 1
(B) 0 to 2
(C) 0 to 3
(D) 0 to 4
8) $\qquad$ is not a combinational logic circuit
(A) adder
(B) multiplexer
(C) encoder
(D) flip-flop
9) The single bit change code is
(A) Ex-3 code
(B) Gray code
(C) 8421 code
(D) Binary code
10) The number of select lines in a $1: 16$ de-multiplexer is $\qquad$
(A) 1
(B) 2
(C) 3
(D) 4
11) What is another name for a one shot multivibrator?
(A) Mono stable
(B) Multi Stable
(C) Astable
(D) Bi-stable
12) An op-amp has very $\qquad$
(A) High voltage gain
(B) High input impedance
(C) Low output impedance
(D) All of the above
13) Output of an operational amplifier integrator for an input of square waveform is
(A) Square wave
(B) Triangular wave
(C) Sine wave
(D) Cosine wave
14) The CMMR of an operational amplifier is defined as
(A) The ratio of differential voltage gain to common-mode voltage gain.
(B) The ratio of common mode voltage gain to differential voltage gain.
(C) Ratio of the offset voltage to offset current
(D) Sum of the common-mode voltage gain to differential voltage gain.
15) Closed loop voltage gain of a non-inverting operational amplifier with a feedback resistor $R_{\mathrm{F}}$ and a series resistor $R_{1}$ is equal to
(A) $-\frac{R_{F}}{R_{1}}$
(B) $\frac{R_{1}}{R_{F}}$
(C) $1+\frac{R_{F}}{R_{1}}$
(D) $1+\frac{R_{1}}{R_{F}}$
16) Electrical transducer generates
(A) Physical Signal
(B) Biological Signal
(C) Chemical Signal
(D) Electrical Signal
17) Diaphragm is the sensing element used to measure
(A) Temperature
(B) Vibration
(C) Pressure
(D) Velocity
18) The most suitable transducer suitable for the measurement of small thickness is
(A) LVDT
(B) Strain gauge
(C) Capacitive
(D) Venturi tube
19) One of the following parameter of a fluid is measured using an anemometer.
(A) Viscosity
(B) Velocity
(C) Mass
(D) Pressure
20) The unit of flux density is known as
(A) Magnetomotive force
(B) Weber
(C) Maxwell
(D) Tesla
21) The term RISC stands for
(A) Random Instruction Set Computer
(B) Real-time Instruction System Chip
(C) Reduced Instruction Set Computer
(D) Real-time Instruction Set Computer
22) The size of the internal data memory in Intel 8051 microcontroller is $\qquad$ .
(A) 256 Bytes
(B) 128 Bytes
(C) 4K Bytes
(D) 1K Bytes
23) The single operand logical instruction of 8051 is $\qquad$ .
(A) ANL
(B) ORL
(C) XRL
(D) RRC
24) The instruction MOV A, @ R1 in 8051
(A) Copy the accumulator to the contents of memory whose address is in R1
(B) Copy the contents of memory whose address is in R1 to the accumulator
(C) Copy R1 to the accumulator
(D) Copy the accumulator to R1
25) $\qquad$ register is not the bit-addressable register in 8051.
(A) PCON
(B) TCON
(C) SCON
(D) PSW
26) The relationship among frequency $f$, wavelength $\lambda$ and the light velocity c for a radio transmission is
(A) $c=\lambda / f$
(B) $\lambda=1 / \mathrm{c} f$
(C) $\mathrm{c}=f \lambda$
(D) $f=c \lambda$
27) The open wire transmission line consists of
(A) Only Conductor
(B) Only Dielectric
(C) Both conductor and dielectric
(D) Neither conductor nor dielectric
28) Identify which is not a type of waveguide.
(A) Rectangular
(B) Circular
(C) Cylindrical
(D) Cavity resonator
29) In an electrically large loop, an overall length of the loop is equal to $\qquad$
(A) $\lambda / 2$
(B) $\lambda$
(C) $\lambda / 10$
(D) $\lambda / 50$
30) In Transmission Line the condition for maximum power transfer is
(A) $\mathrm{ZO} \neq \mathrm{ZL}$
(B) $\mathrm{ZO}<\mathrm{ZL}$
(C) $\mathrm{Z} 0=\mathrm{ZL}$
(D) $\mathrm{Z} 0>\mathrm{ZL}$
31) The modulation index â of frequency modulation with frequency deviation $\Delta f$ and the modulating signal frequency $f_{\mathrm{m}}$ is equal to
(A) $\Delta f / f_{m}$
(B) $f_{m} / \Delta f$
(C) $1+\left(\Delta f / f_{m}\right)$
(D) $1+\left(f_{m} / \Delta f\right)$
32) The bandwidth requirement for the standard amplitude modulation with the highest frequency spectrum $f_{\mathrm{m}}$ of the modulating signal is equal to
(A) $2 f_{m}$
(B) $f_{m}$
(C) $f_{m} / 2$
(D) $4 f_{\mathrm{m}}$
33) The total average power $\mathrm{P}_{\mathrm{T}}$ in a sinusoidal amplitude modulated wave with a carrier power $P_{C}$ and the modulation index $m$ is given by
(A) $P_{T}=P_{C}\left(1+\frac{\mathrm{m}}{2}\right)$
(B) $\quad P_{T}=P_{C}\left(1+\frac{\mathrm{m}^{2}}{2}\right)$
(C) $P_{T}=P_{C}+\frac{\mathrm{m}}{2}$
(D) $\quad P_{T}=P_{C}+\frac{\mathrm{m}^{2}}{2}$
34) The relation between the sampling frequency $f_{\mathrm{s}}$ and the highest frequency spectrum $f_{\mathrm{m}}$ of the signal to be sampled that satisfies the sampling theorem is given by
(A) $f_{s} \leq f_{m}$
(B) $f_{s}=f_{m}$
(C) $f_{s}=1 / f_{m}$
(D) $f_{s} \geq 2 f_{m}$
35) The root mean square voltage $V$ value of the amplitude modulated signal with the root-mean square value of carrier being $\mathrm{V}_{\mathrm{c}}$ and modulation index m is equal to
(A) $V_{c} \sqrt{1+\frac{m^{2}}{2}}$
(B) $V_{c} \sqrt{1-\frac{m^{2}}{2}}$
(C) $\sqrt{V_{c}+\frac{m^{2}}{2}}$
(D) $\sqrt{V_{c}-\frac{m^{2}}{2}}$
36) Kepler's first law of planetary motion states that the satellite will follow one of the below mentioned paths in its orbit around the primary body.
(A) Circular
(B) Linear
(C) Non-linear
(D) Elliptical
37) The geostationary satellites must have one of the following angle of inclination.
(A) 90 degree
(B) Zero degree
(C) 45 degree
(D) 60 degree
38) Attitude control of a satellite implies to
(A) Positioning the antenna direction
(B) Changing the satellite orbit
(C) Correcting the satellite drift
(D) Both B and C
39) In a pulse amplitude modulation, one of the following parameters of the pulse is varied in accordance with the modulating signal.
(A) Width
(B) Period
(C) Amplitude
(D) Frequency
40) INTELSAT stands for $\qquad$ .
(A) International Telecommunications Satellite
(B) India Telecommunications Satellite
(C) Inter Telecommunications Satellite
(D) None of the above
41) The continuous-time signal is converted into discrete-time signal using $\qquad$
(A) Convolution
(B) Correlation
(C) Sampling
(D) Quantization
42) The time-scaling operation is performed on $\qquad$ variable.
(A) Dependent
(B) Independent
(C) Both dependent and independent
(D) Neither dependent nor independent
43) The z-transform of $x(n)=u(-n)$ is
(A) $\frac{1}{1-z}$
(B) $\frac{1}{z-1}$
(C) $\frac{z}{z+1}$
(D) $\frac{1}{z+1}$
44) The discrete Fourier Transform
(A) Obeys Linearity property
(B) Not obeys Periodicity property
(C) Not obeys Linearity property
(D) Obeys Linearity property but not obeys Periodicity property
45) The expression for the convolution sum is
(A) $y(n)=\sum_{k=-\infty}^{\infty} x(k) h(n-k)$
(B) $y(n)=\sum_{K=-1}^{N} x(k) h(n-k)$
(C) $y(n)=\sum_{K=0}^{N-1} x(k) h(n-k)$
(D) $y(n)=\sum_{K=1}^{\infty} x(k-n) h(n)$
46) The PLA consists of $\qquad$
(A) Programmable AND array and fixed OR array.
(B) Programmable AND and Programmable OR array.
(C) Fixed AND array and a programmable OR array.
(D) Non programmable AND and OR array
47) Which of the following is not a PLD?
(A) CPLD
(B) FPGA
(C) PLA
(D) HPLD
48) The basic building block in VHDL is $\qquad$ .
(A) Architecture
(B) Entity
(C) Process
(D) Package
49) In VHDL, the statement statement $x<=y$ stands for
(A) Value of $x$ is lesser than equal to $y$
(B) $x$ gets the value when less than $y$
(C) $x$ gets the value of $y$
(D) $y$ gets the value of $x$
50) In VHDL, the object used to connect entities is
(A) Constant
(B) Variable
(C) File
(D) Signal

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## Rough Work

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 ఎంబుదన్ను யరికిలలిసింి.



 జదాబ్దారరంగిరుత్తిర.

a) ய్రతియృందు ن్రె్నయన్ను జలగ్రతయింద ఓది.
 లుత్తరహస్ను నిధణరిి.


 కుంబిర:




 ळలళెయల్లిన లుదాळరణ నైలణి.
 యృడ్బొలు.
 పిల్టలిద్యానిలయుద
 かాలగబळుదు.




 అంచగఆన్ను யֹడియత్ర్ప్దు.

## ఓ.ఎం.ఆరా. ळలఆయన్ను కుంబలు ష్యృజసెగళు









Note : English version of the instructions is printed on the front cover of this booklet.

