



భారతీయ సాంకేతిక విజ్ఞాన సంస్థ హైదరాబాద్
भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

Advt. No. IITH/2023/NF/15

Question Paper Code:

Application Number of the Candidate

Name of the Post: Junior Technician-Central Workshop (15.5) (Electronics/Mechatronics) Pay Level: 03

Date & Time of the Exam: 6 Dec 2023, 11.00 am

Duration: 01 hr. 30 min

Scheme of the Exam:

Topic	Number of Question	Marks
General English (Communication Skills)	8	8
General Arithmetic		
Reasoning		
Work Related Topics	32	32

Instructions to fill the responses in the OMR answer sheet:

1. Candidate must write his/her **application number** in the designated box on the top of OMR answer sheet.
2. Candidates must write the post code and Question paper code in the designated boxes on the top of OMR answer sheet.
3. Candidates must sign in the box provided in the OMR answer sheet.
4. Each answer sheet must be signed by the invigilator in the space printed in the OMR answer sheet.
5. Only one response to be selected & marked. In case more than one response is marked for a single question or no response is marked for a question, no marks will be awarded for that question.
6. Partially filled circles shall not be considered as responses.
7. Erasing or changing of answer is not allowed.
8. No negative marking
9. Candidate must use Blue/Black ball point pen to fill his/her responses.
10. Rough work should not be done on the OMR answer sheet.
11. Candidates can use the designated page(s) of the question booklet for the purpose of rough work.

1	Choose suitable "wh" word for the given sentence_ " _____ were you angry?"
A	Which
B	Why
C	Who
D	What

2	Which one is NOT a vowel?
A	A
B	E
C	O
D	X

3	Choose the correct tense of the verb. "I _____ music next year."
A	learn
B	am learning
C	will not be learning
D	learnt

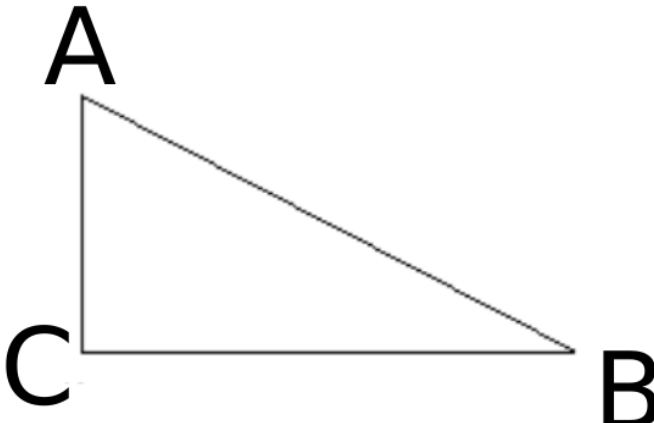
4	Fill in the blank with comparative adjectives. "Your AC is _____ than mine".
A	cool
B	cooler
C	coolest
D	cooling

5	Fill in the blank with correct word "They _____ good friends"
A	is
B	am
C	will never be
D	was

6	Which of the below are not fundamental units?
A	Length, Mass, Volume
B	Length, Mass, Area
C	Length, Pressure, Volume
D	All of the above

7	What is not the unit of mass?
A	Ampere
B	Coulomb
C	Volts
D	All of the above

8	What is the x value for $x^2 + 66 = 130$?
A	4
B	6
C	8
D	10

9	<p>If the angle CBA is 30 degrees and if the length AC is 6 cm, what is AB?</p> 
A	3 cm
B	6 cm
C	12 cm
D	24 cm

10	How many days will an electrician take to solder 64 circuits if he solders 8 circuits in 4 days?
A	8 days
B	16 days
C	24 days
D	32 days

11	Which formula is used to calculate the power of a DC circuit?
A	Voltage x time
B	Current x voltage
C	Current x resistance
D	Voltage x resistance

12	Which resistor allows the lowest current flows in a parallel circuit having the values of 50 Ω , 220 Ω , 450 Ω and 560 Ω connected with supply?
A	50 Ω
B	560 Ω
C	450 Ω
D	220 Ω

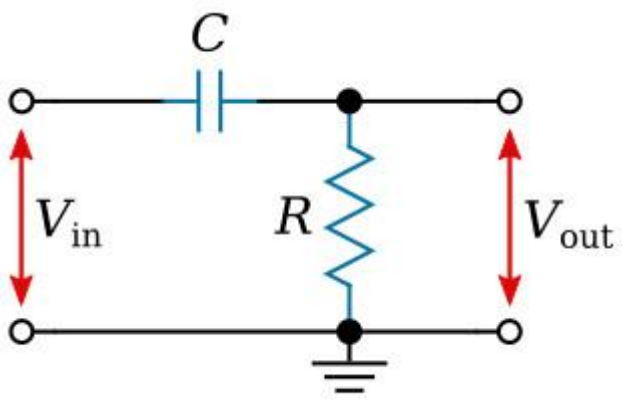
13	What is the unit of capacitance?
A	Mho
B	Henry
C	Farad
D	Coulomb

14	What is the function of dielectric insulator in capacitor?
A	Increases the strength of capacitance
B	Prevents any current flow between plates
C	Helps to hold the charge in capacitor for long period
D	All of the above

15	Which of the below configuration of a three phase circuit has a neutral line?
A	None of the below
B	Delta
C	Delta with an unbalanced load
D	Star

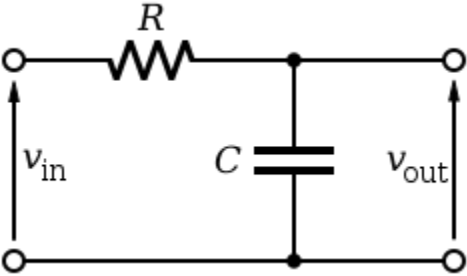
16	How many equations are present in the Maxwell's equations of electromagnetism?
A	1
B	2
C	3
D	4

17	What is the principle of D.C generator?
A	Kirchhoff's law
B	Thevenin's law
C	Faradays laws of electromagnetic induction
D	None of the above

18	The circuit shown below acts as 
A	Low pass filter
B	Bandpass filter
C	Bandstop filter
D	High pass filter

19	What is the purpose the Wheatstone bridge?
A	None of the below
B	Measure current
C	Measure voltage
D	Measure resistance

20	What is one of the application of the Wheatstone bridge?
A	None of the below
B	Measure charge
C	Measure stress
D	Measure strain

21	The circuit shown below acts as 
A	Bandpass filter
B	Low pass filter
C	Bandstop filter
D	High pass filter

22	Which filter circuit is capable of removing voltage spikes in the rectifier circuit?
A	Bandpass filter
B	Low pass filter
C	Bandstop filter
D	High pass filter

23	What is the criteria to decide a material as conductor, semi conductor and insulator?
A	Existence of valance electrons in atom
B	Atomic bonding structure of atom
C	Atomic weight of the atom of the material
D	Atomic number of the atom of the material

24	Which type of device protects motors from over heating and over loading in a panel board?
A	Rectifier
B	Limit switch
C	Thermal relay
D	Electromechanical relay

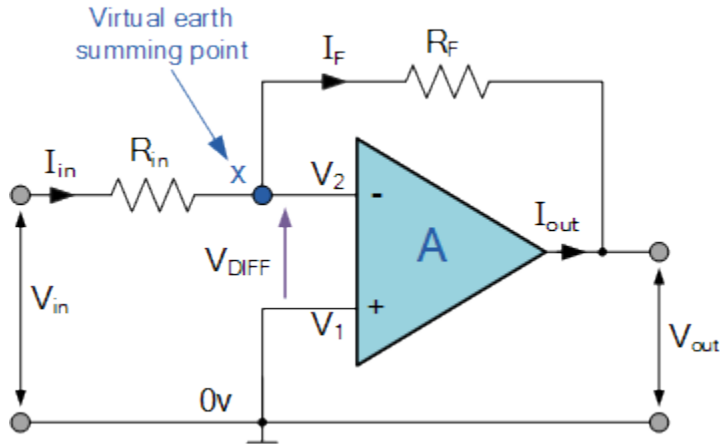
25	What is the full form of PWM in relation to electronics?
A	Pulse wide modulation
B	Polar width modulation
C	Pulse width modulation
D	All of the above

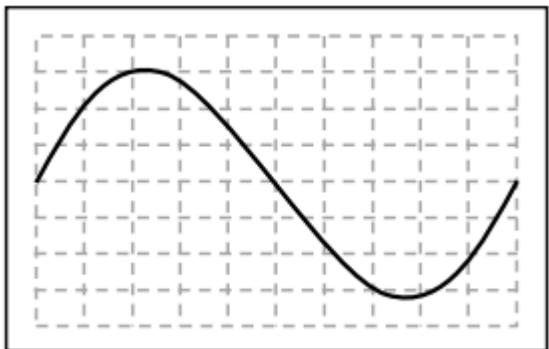
26	Which of the below is a necessary feature of an ammeter?
A	Low cost
B	Low footprint
C	Low resistance
D	Low voltage

27	Why the transformer core is made as thin laminations?
A	To increase the hysteresis losses
B	To decrease the hysteresis losses
C	To minimize eddy current losses
D	None of the above

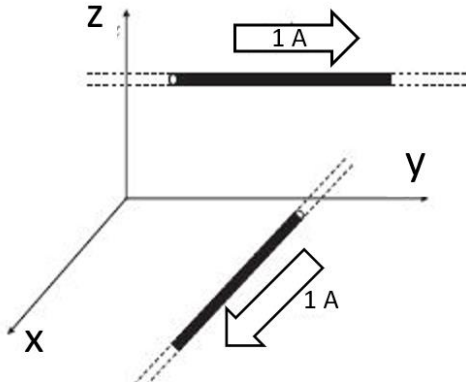
28	The statement 'Any linear circuit containing several voltages and resistances can be replaced by just one single voltage in series with a single resistance connected across the load' is the
A	Norton's theorem
B	Tellegen's theorem
C	Kirchhoff's law
D	Thevenin's theorem

29	The circuit shown below represents a
A	Inverting operational amplifier
B	non-inverting operational amplifier
C	Voltage summer
D	Differentiator

30	<p>In the circuit shown below, the gain is</p> 
A	R_f/R_{in}
B	$-R_f/R_{in}$
C	$R_f + R_{in}/R_{in}$
D	Infinity

31	<p>A voltage of $6 \cos(t)$ V is fed as y-input to a CRO. The waveform seen on the screen of the CRO is shown in the figure. The Y axes settings for the CRO is</p> 
A	0.5 V/div
B	1 V/div
C	1.5 V/div
D	2 V/div

32 Two infinitely long wires carrying current are as shown in the figure below. One wire is in the $y - z$ plane and parallel to the y axis. The other wire is in the $x - y$ plane and parallel to the x - y axis. Which components of the resulting magnetic field are non-zero at the origin ?



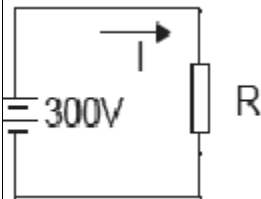
A x, y, z components

B x, y components

C y, z components

D x, z components

33 In the figure, the value of resistor R is $(25 + I/2)$ ohms, where I is the current in amperes. The current I is _____




A 5 A

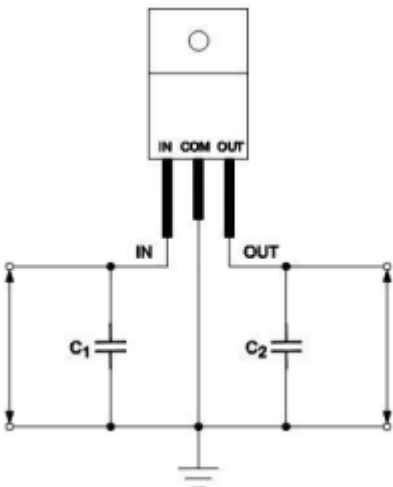
B 10 A

C 30 A

D 40 A

34	What is the purpose of trimmer capacitor?
A	Coupling
B	Decoupling
C	Fine tuning
D	Filtering

35	Identify the below component
	
A	LDR
B	Transistor
C	LOR
D	RLC

36	What is the function of capacitor C2 in the voltage regulator?
	
A	Smooth the ripple content
B	Prevent the setting up of oscillations
C	Sharpening
D	Improve the transient response of output voltage

37	What is the output of the regulator 7805?
A	8V
B	7V
C	5V
D	0 V (Ground)

38	When two resistors of resistance R are connected in series, their effective resistance is
A	$R/2$
B	R
C	$3R/2$
D	2R

39	What is the purpose of using two regulators in the below circuit?
A	Rectify the positive AC voltage
B	Divide the output negative voltage
C	Provide positive and negative voltage
D	Regulate the output voltage

40	What is the process of adding impurities to a pure semiconductor material?
A	Doping
B	Etching
C	Forming
D	Diffusion

