Seat No. _____

DDCET Examination 2024-25

Date:

Time: 2 Hours 30 Minutes **Total Marks: 200**

Instructions:

1. **Every Questions carries two marks.**
2. **Paper (BE-01) and Paper (BE-02) carries 100 marks each.**

Section: 01

Subject Name: Basics of Science and Engineering (BE-01)

1.	Which of the following is a vector quantity?			
	A.	Temperature	B.	Mass
	C.	Distance	D.	Force
2.	If a measurement has an absolute error of 0.02 cm and the measured value is 2.5 cm, what is the relative error?			
	A.	0.01	B.	0.04
	C.	0.008	D.	0.08
3.	If the length of an object is measured using a Vernier calliper with a least count of 0.01 cm, what is the precision of the measurement?			
	A.	1 mm	B.	0.1 mm
	C.	0.01 mm	D.	100 mm
4.	The screw gauge has a pitch of 0.5 mm and 100 divisions on the circular scale. What is the least count of the screw gauge?			
	A.	0.05 mm	B.	0.005 mm
	C.	0.005 cm	D.	0.5 cm
5.	In a measurement, if the measured value is 30 cm and the absolute error is 0.2 cm, what is the range of possible values?			
	A.	29.8 cm to 30.2 cm	B.	29.5 cm to 30.5 cm
	C.	28 cm to 32 cm	D.	28.2 cm to 30.2 cm
6.	If a measurement is 5.00 m with a precision of 0.01 m, how many significant figures are in the measurement?			
	A.	1	B.	2
	C.	3	D.	4
7	The force that acts on an object moving in a circular path and is directed outward from the centre is called:			
	A.	Centrifugal force	B.	Centripetal force
	C.	Frictional force	D.	Tension force
8	The equation for kinetic energy (KE) is:			
	A.	KE =$(1/2)mv^2$	B.	KE = mgh/t
	C.	KE = Fdt	D.	KE = P/t
9	The energy an object possesses due to its motion is called:			
	A.	Potential energy	B.	Kinetic energy
	C.	Elastic energy	D.	Mechanical energy
10	In circular motion, which force is responsible for keeping an object moving in a circular path?			
	A.	Gravitational force	B.	Centripetal force
	C.	Centrifugal force	D.	Frictional force
11	If a force of 10 N is applied to an object for 5 seconds, what is the impulse of force?			

	A.	2 N s	B.	50 N s
	C.	2 N	D.	50 N
12	The linear momentum of an object is defined as:			
	A.	Mass × Acceleration	B.	Mass × Velocity
	C.	Acceleration × Velocity	D.	Mass / Volume
13	Two capacitors, C_1=3 μF and C_2= 2 μF, are connected in series. Calculate the equivalent capacitance.			
	A.	1.2 μF	B.	5 μF
	C.	6 μF	D.	1.5 μF
14	A wire has a resistance of 8 Ω. If the current flowing through the wire is 2 A, calculate the voltage across the wire.			
	A.	4 V	B.	16 V
	C.	4 W	D.	16 W
15	A charge of $2\ \mu C$ is placed in an electric field of intensity $500\ N/C$. Calculate the force experienced by the charge.			
	A.	0.001 N	B.	0.01 N
	C.	1000 N	D.	250 N
16	Two point charges, $Q1=+5\ \mu C$ and $Q2=-4\ \mu C$, are placed 2 meters apart. Calculate the magnitude of the force between them. (k = 9 X 10^9 Nm^2/C^2)			
	A.	0.045 N	B.	0.45 N
	C.	20 N	D.	10 N
17	The property of a material to oppose the flow of electric current is called:			
	A.	Resistance	B.	Conductance
	C.	Capacitance	D.	Susceptance
18	The reciprocal of resistance is known as:			
	A.	Impedance	B.	Conductance
	C.	Capacitance	D.	Susceptance
19	Which of the following is a mode of heat transfer that does not require a medium?			
	A.	Conduction	B.	Convection
	C.	Radiation	D.	Expansion
20	The transfer of heat through the bulk movement of a fluid is known as:			
	A.	Conduction	B.	Convection
	C.	Radiation	D.	Expansion
21	Which temperature scale is an absolute temperature scale?			
	A.	Celsius	B.	Fahrenheit
	C.	Kelvin	D.	Rankine
22	Specific heat is the heat capacity per unit_____			
	A.	Volume	B.	Mass
	C.	Area	D.	Temperature
23	Linear thermal expansion is most applicable to:			
	A.	Gases	B.	Liquids
	C.	Solids	D.	Plasma
24	Which material would generally have the highest thermal conductivity?			
	A.	Wood	B.	Rubber
	C.	Aluminium	D.	Styrofoam
25	The distance between two successive points in a wave in the same phase is called:			
	A.	Wavelength	B.	Frequency
	C.	Amplitude	D.	Periodic time

26	If the frequency of a wave is 50 Hz, what is its periodic time?			
	A.	0.02 s	B.	0.04 s
	C.	0.5 s	D.	2 s
27	Which property of a wave is related to its loudness in the case of sound waves?			
	A.	Amplitude	B.	Frequency
	C.	Wavelength	D.	Periodic time
28	The SI unit of amplitude is:			
	A.	Hertz	B.	Watt
	C.	Meter	D.	Decibel
29	The change in direction of a wave when it crosses the boundary between two different media is called:			
	A.	Reflection	B.	Refraction
	C.	Diffraction	D.	Absorption
30	According to Snell's Law, the angle of incidence is related to the angle of refraction by:			
	A.	$n_1 \sin(\theta_1) = n_2 \sin(\theta_2)$	B.	$n_1 \cos(\theta_1) = n_2 \cos(\theta_2)$
	C.	$n_1 \cot(\theta_1) = n_2 \cot(\theta_2)$	D.	$n_1 \tan(\theta_1) = n_2 \tan(\theta_2)$
31	On burning magnesium ribbon in air, it produces …….. flame.			
	A.	Blue	B.	Yellow
	C.	Dazzling white	D.	Red
32	Which of the following is a balanced chemical equation?			
	A.	$HNO_3 + Ca(OH)_2 \rightarrow Ca(NO_3)_2 + H_2O$	B.	$NaOH + H_2SO_4 \rightarrow Na_2SO_4 + H_2O$
	C.	$BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + HCl$	D.	$NaCl + AgNO_3 \rightarrow AgCl + NaNO_3$
33	Which one of the following processes involve chemical reactions?			
	A.	Storing of oxygen gas under pressure in a gas cylinder	B.	Liquefaction of air
	C.	Keeping petrol in a china dish in the open	D.	Heating copper wire in presence of air at high pressure
34	The chemical formula of hydrochloric acid is_____.			
	A.	HCl	B.	H_2SO_4
	C.	HNO_3	D.	CH_3COOH
35	Which of the following is an example of strong base?			
	A.	NH_4OH	B.	$Ca(OH)_2$
	C.	Both A and B	D.	NaOH
36	Which of the following is an example of weak acid?			
	A.	Hydrochloric acid	B.	Acetic acid
	C.	Sulphuric acid	D.	Nitric acid
37	Which gas is produced by the reaction of acid with metal?			
	A.	Hydrogen	B.	Oxygen
	C.	Carbon dioxide	D.	Nitrogen
38	Which of the following oxides of iron would be obtained on the prolonged reaction of iron with steam?			
	A.	FeO	B.	Fe_2O_3
	C.	Fe_3O_4	D.	Fe_2O_3 and Fe_3O_4
39	Which of the following is the correct property for ionic compounds?			
	A.	Low melting and boiling points	B.	High melting point and low boiling point

	C.	High melting and boiling points	D.	Low melting point and high boiling point
40.	The arrangement for Copper, Tin, Lead and Mercury, according to the reactivity series, is			
	A.	Tin > Lead > Copper > Mercury	B.	Lead > Copper > Mercury > Tin
	C.	Copper > Mercury > Tin > Lead	D.	Mercury > Tin > Lead > Copper
41	What is the full form of CPU?			
	A.	Computer Processing Unit	B.	Computer Principle Unit
	C.	Central Processing Unit	D.	Control Processing Unit
42	What is smallest unit of the information?			
	A.	Byte	B.	Bit
	C.	MB	D.	GB
43	What does the abbreviation HTML stand for?			
	A.	Hyper Text Markup Language	B.	Hyper Type Markup Language
	C.	Hyper Text Markdown Language	D.	High Text Markup Language
44	Which of the following is MS Office Suite's software program?			
	A.	Microsoft Word	B.	Microsoft Excel
	C.	Microsoft PowerPoint	D.	All of the above
45	What is the default extension of a Microsoft Excel file?			
	A.	msxcl	B.	xcl
	C.	xlsx	D.	xlsm
46	Which one of the following is an aquatic ecosystem?			
	A.	Wetland	B.	Desert
	C.	Mountain	D.	Island
47	Which one of the following is the indirect use of forests?			
	A.	Medicinal plants	B.	Checking soil erosion
	C.	Building material	D.	Grazing
48	Gardens are examples of			
	A.	Natural ecosystems	B.	Artificial ecosystems
	C.	Ecology	D.	Environment
49	Which of the following is a non-renewable energy resource?			
	A.	solar	B.	methane
	C.	hydroelectric	D.	coal
50	Which of the following are the primary causes of water pollution?			
	A.	Plants	B.	Animals
	C.	Human activities	D.	None of these

Section: 02
Subject Name: Aptitude Test (Mathematics & Soft Skill) (BE-02)

1	If $\begin{vmatrix} x & 3 & 1 \\ -2 & 1 & 4 \\ 4 & 0 & 6 \end{vmatrix} = 86$ then $x =$ _____			
	A.	0	B.	1
	C.	-1	D.	2
2	If order of matrix A is 4×3 order of matrix B is 3×5 and order of matrix ABC is 4×2 then order of matrix C is _____			
	A.	4×2	B.	3×2
	C.	2×2	D.	5×2
3	For square matrix A if $A^{-1} = adjA$ then $\lvert A\rvert =$ _____			
	A.	1	B.	0
	C.	-1	D.	None of above
4	If $A = \begin{bmatrix} 4 & 6 \\ 2 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -3 \\ -1 & 2 \end{bmatrix}$ then $(A+B)^{-1} =$ _____			
	A.	$\frac{1}{12}\begin{bmatrix} 3 & -3 \\ -1 & 5 \end{bmatrix}$	B.	$\frac{1}{12}\begin{bmatrix} 5 & -3 \\ -1 & 3 \end{bmatrix}$
	C.	$\frac{1}{12}\begin{bmatrix} 5 & -1 \\ -3 & 3 \end{bmatrix}$	D.	$\frac{1}{12}\begin{bmatrix} 3 & -1 \\ -3 & 5 \end{bmatrix}$
5	Period of $\sin\left(\frac{x}{3}\right)+\tan\left(\frac{x}{4}\right)$ is _____.			
	A.	6π	B.	12π
	C.	24π	D.	10π
6	$\frac{\sin 2A+\sin 8A}{\cos 2A+\cos 8A} =$ _____			
	A.	$\cot 5A$	B.	$\tan 10A$
	C.	$\tan 5A$	D.	None of above
7	$\sec 75^\circ =$ _____			
	A.	$\frac{2\sqrt{2}}{\sqrt{3}+1}$	B.	$\frac{2\sqrt{2}}{1-\sqrt{3}}$
	C.	$\frac{2\sqrt{2}}{\sqrt{3}-1}$	D.	None of above
8	Angle between vector $\bar{a}$ and (1,1,1) is 60°. If direction cosines of $\bar{a}$ are l,m,n then $l+m+n =$ _____			
	A.	$\frac{1}{2}$	B.	$\frac{\sqrt{3}}{2}$
	C.	$\frac{2}{\sqrt{3}}$	D.	1
9	If vectors $(m,3,5)$ and $(m,m-1,-3)$ are perpendicular to each other then $m =$ ____			

	A.	3	B.	0
	C.	2	D.	6
10	Equation of line perpendicular to line $3x-2y+7=0$ and passes through $(3,2)$ is ___			
	A.	$3x+2y-11=0$	B.	$2x+3y-5=0$
	C.	$2x+3y+12=0$	D.	$2x+3y-12=0$
11	Radius of circle $2x^2+2y^2+2x+4y-2=0$ is _____.			
	A.	7	B.	$\sqrt{7}$
	C.	$\frac{3}{2}$	D.	$\sqrt{\frac{3}{2}}$
12	If $f(x)=\tan x$ then $f(45^\circ)+f(30^\circ)=$ _____			
	A.	$\frac{1-\sqrt{3}}{\sqrt{3}}$	B.	$1+\sqrt{3}$
	C.	$\frac{\sqrt{3}+1}{\sqrt{3}}$	D.	$\frac{\sqrt{3}-1}{\sqrt{3}}$
13	$\lim_{n\to\infty}\frac{3n^2+5n-7}{5n^2+6n-2}=$ _____			
	A.	$\frac{5}{3}$	B.	$\frac{3}{5}$
	C.	$\frac{7}{2}$	D.	0
14	$\lim_{x\to 0}\frac{e^x+\sin x-1}{x}=$ _____			
	A.	0	B.	2
	C.	1	D.	None of above
15	$\frac{d}{dx}(\log_e(\sin x))=$ _____			
	A.	$\cot x$	B.	*tanx*
	C.	cosec*x*	D.	None of above
16	$\frac{d}{dx}(x\log_e x)=$ _____			
	A.	$\frac{1}{x}$	B.	$\frac{x+1}{x}$
	C.	$\log_e x+x$	D.	$\log_e x+1$
17	If $x=a(1+\sin\theta), y=a(1-\cos\theta)$ then $\frac{dy}{dx}=$ _____			
	A.	$\cot\theta$	B.	$\sin\theta$
	C.	$\tan\theta$	D.	$\sec\theta$
18	If equation of motion of moving object is $s=t^3-6t^2+9t+7$ then at $t=$ _____ second object changes its direction.			
	A.	2,3	B.	1,2
	C.	1,3	D.	2,3
19	$\int \sin^5 x\cos x dx=$ _____			

	A.	$\frac{\sin^4 x}{4}+c$	B.	$\frac{\sin^6 x}{6}+c$
	C.	$5\sin^4 x+c$	D.	$6\sin^6 x+c$
20	$\int xe^x dx =$ _____			
	A.	xe^x+e^x+c	B.	e^x-x+c
	C.	e^x+x+c	D.	xe^x-e^x+c
21	$\int_0^{\frac{\pi}{2}} \frac{\sin x}{\sin x+\cos x} =$ _____			
	A.	$\frac{\pi}{4}$	B.	$\frac{\pi}{2}$
	C.	π	D.	None of above
22	$\int_1^2 \frac{2x}{1+x^2} =$ _____			
	A.	$\log_e\left(\frac{1}{2}\right)$	B.	$\log_e\left(\frac{5}{2}\right)$
	C.	$\log_e(5)$	D.	$\log_e(2)$
23	If $\log_2(\log_3 x)=1$ then $x=$ _____			
	A.	3	B.	8
	C.	9	D.	2
24	$3^{\log_9 4} =$ ____			
	A.	4	B.	3
	C.	2	D.	16
25	If mean of 3,5,a,4,6 is 5 then a=_____			
	A.	5	B.	6
	C.	7	D.	8
	Read the below mentioned comprehension passage and answer the questions 26 to 30. In the ancient village of Varanasi along the Ganges River, there lived a poor but humble weaver named Raj. He was struggling to meet both ends, yet humble and helping to others. One day, as he worked diligently on his loom, a celestial figure appeared. It was Saraswati, the goddess of knowledge, disguised as an old woman. Impressed by Raj's kindness, she blessed him with unparalleled weaving skills and told him that goddess Lakshami would soon bring prosperity to his doorstep. News of Raj's extraordinary talent spread, attracting the attention of the king. The king, intrigued by the tales, challenged Raj to weave a fabric that could capture the essence of the river itself. Determined, Raj embarked on a journey to gather inspiration from the Ganges. After weeks of contemplation by the riverbank, Raj created a masterpiece, a fabric that seemed to ripple like flowing water. The king, amazed by the creation, gave Raj pricey rewards and honored him with the post of Royal Craftsman of his kingdom			
26	Why did a celestial figure appear before Raj?			
	A.	Because of Raj’s prayer	B.	Because of black magic

	C.	Because Raj was a devotee to goddess.	D.	Because Raj was a kind and hardworking person.
27	Who appeared before Raj in the guise of an old woman?			
	A.	Goddess Swaraswati	B.	Goddess Lakshami
	C.	Goddess Paravati	D.	Goddess Durga
28	What did the king challenge Raj to weave?			
	A.	Fabric praising the King	B.	Fabric with celestial patterns
	C.	Fabric depicting spirit of Ganges	D.	Fabric depicting royal symbols.
29	How did Raj gather inspiration for his weaving?			
	A.	By visiting the mountains	B.	By visiting the temple
	C.	By worshipping the goddess	D.	By visiting the river Ganges
30	Find one word substitute for ‘an act of changing one’s appearance’ from the passage.			
	A.	Celestial	B.	Disguise
	C.	Contemplation	D.	Intrigue
31	Which of the following ensures completion of the process of communication cycle?			
	A.	Channel	B.	Encoding
	C.	Feedback	D.	Decoding
32	…….. communication means communication without words.			
	A.	Written	B.	Verbal
	C.	Non-verbal	D.	Reading
33	The person who transmits the message is called …….			
	A.	Channel	B.	Sender
	C.	Receiver	D.	Respondent
34	Semantic barrier to communication arises due to problems of …….			
	A.	Language	B.	Expressions
	C.	Psychology	D.	Technology
35	The movement of body, facial expressions, hand movements, gestures, etc. while communicating refer to …….			
	A.	Proxemics	B.	Kinesics
	C.	Paralanguage	D.	Appearance
36	The address of recipient of the letter is called ……..			
	A.	Outside address	B.	Sender’s address
	C.	Inside Address	D.	Offside Address
37	After receiving a letter of complaint, which kind of letter is drafted in response?			
	A.	Letter of Investigation	B.	Letter of Adjustment
	C.	Letter of Inquiry	D.	Letter of Reply
38	C.W.O. in business letter or email stands for …….			
	A.	Cash Without Order	B.	Cash With Offer
	C.	Cash With Order	D.	Company With Order
39	Which of the following is an advantage of an email?			
	A.	Desired length	B.	Ease of communication
	C.	Lower cost	D.	All of the above
40.	BCC in email stands for ……			
	A.	Blind Carbon Copy	B.	Below Carbon Copy
	C.	Business Carbon Copy	D.	Business Client Company
41	_____ tense is used in the headlines of newspapers.			
	A.	Simple present tense	B.	Simple past tense
	C.	Simple future tense	D.	Present continuous tense

42	The train _____ before we reached the station.			
	A.	Left	B.	has left
	C.	had left	D.	will be left
43	Rima is a good dancer. The underlined word “good” in the sentence given is _____.			
	A.	a noun	B.	an adjective
	C.	a verb	D.	an adverb
44	_____ you work hard, you will succeed in the university Examination.			
	A.	Though	B.	But
	C.	Unless	D.	If
45	One of my friends _____ old.			
	A.	am	B.	is
	C.	are	D.	has
46	Choose the correct spelling.			
	A.	Vaccum	B.	Vacuum
	C.	Vacumm	D.	Veccum
47	Choose the correct spelling.			
	A.	Enterpreneur	B.	Entreorenure
	C.	Entrepreneur	D.	Enterprenure
48	Choose the correct sentence.			
	A.	He is reading a book yesterday.	B.	He reads a book now.
	C.	He read a book now.	D.	He is reading a book now.
49	Choose the correct sentence.			
	A.	I don’t use public transport daily.	B.	I didn’t use public transport daily.
	C.	I not use public transport daily.	D.	I not using public transport daily.
50	Choose the correct sentence.			
	A.	Have I a pen?	B.	Has I a pen?
	C.	Do I have a pen?	D.	Do I has a pen?