

Name:	 UPES <small>UNIVERSITY WITH A PURPOSE</small>
Enrolment No:	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, July 2020

Course: B.Tech CSE+AI/ML	Semester: IV
Program: Algorithm for Intelligent Systems and Robotics	Time : 02 hrs.
Course Code: CSAI2004	Max. Marks: 60

Instructions:

SECTION A

Each question carry one marks for correct answer.

1	M C	A Robot is a	Program mable	incorr ect	Multi functional manipulat or	incorr ect	Both (A) and (B)	correc t	None of the above	incorr ect
2	M C	The main objective(s) of Industrial robot is to	To minimise the labour requirem ent	incorr ect	To increase productivi ty	incorr ect	To enhance the life of producti on machines	Incorr ect	All of the above	correc t
3	M C	Drives are also known as	Actuators	correc t	Controller	incorr ect	Sensors	Incorr ect	Manipulat or	incorr ect
4	M C	Clockwise of Anti clockwise rotation about the vertical axis to the perpendicular arm is provided through	Shoulder swivel	incorr ect	Elbow extension	incorr ect	Arm sweep	correc t	Wrist bend	incorr ect
5	M C	The Robot designed with Polar coordinate systems has	Three linear movemen ts	correc t	Three rotational movemen ts	incorr ect	Two linear and one rotationa l moveme nt	incorr ect	Two rotational and one linear movemen t	incorr ect
6	M C	What is the name for information	temperat ure	incorr ect	feedback	correc t	pressure	incorr ect	signa	incorr ect

		sent from robot sensors to robot controllers?								
7	MC	Which of the following terms IS NOT one of the five basic parts of a robot?	peripheral tools	correct	end effectors	incorrect	controller	incorrect	drive	incorrect
8	MC	The number of moveable joints in the base, the arm, and the end effectors of the robot determines _____	degrees of freedom	correct	payload capacity	incorrect	operational limits	incorrect	flexibility	incorrect
9	MC	For a robot unit to be considered a functional industrial robot, typically, how many degrees of freedom would the robot have?	Three	incorrect	Four	incorrect	Six	correct	Eight	incorrect
10	MC	Which of the basic parts of a robot unit would include the computer circuitry that could be programmed to determine what the robot would do?	Advanced asensornalytics	incorrect	controller	correct	arm	incorrect	end effector	incorrect
11	MC	In a rule-based system, procedural domain knowledge is in the form of _____	rule interpreters	incorrect	meta-rules	incorrect	control rules	incorrect	production rules	correct

1 2	M C	What is Machine Translation?	Converts human language to machine language	incorrect	Converts one human language to another	correct	Converts any human language to English	incorrect	Converts Machine language to human language	incorrect
1 3	M C	Which one is not the part of state space search?	A state	incorrect	The initial state	incorrect	An Operator	incorrect	Traversing state	correct
1 4	M C	The architecture should be able to host new applications and technologies without redesigning the whole system is called	Extensibility	correct	Scalability	incorrect	separation	incorrect	Security	incorrect
1 5	TF	A VLSI layout problem requires positioning millions of components and connections on a chip to minimize area, minimize circuit delays, maximize manufacturing yield.	TRUE							
1 6	TF	Artificial intelligence (AI) is the study and design of intelligent chip.	TRUE							
1 7	M C	Complexity of n queens problem is	$O(n^n)$	correct	$O(\log n)$	correct	$O(n^2)$	incorrect	None of the above	incorrect

18	MC	Example of non monotonic, partially commutative system is	Medical Diagnosis System	incorrect	Game Playing	incorrect	Robot Navigation	correct	Language understanding	incorrect
19	MC	Who coined the term robot?	Karel capek	correct	Romo K	incorrect	Isac Asimo	incorrect	none of the above	incorrect
20	MC	Which one is not the application of AI?	Apple Siri	incorrect	Facebook's News Feed	incorrect	Biomimetics	incorrect	Turing Machine	correct
21	MC	The Third law of robotics defined by Karel Capek is:	A robot must protect its own existence as long as such protection does not conflict others.	correct	A robot may not injure a human being or through inaction allow a human being to come to harm.	incorrect	A robot must obey the orders given it by human beings except where such orders would conflict with others.	Incorrect	None of the above	incorrect
22	MC	Which statement is incorrect about essential abilities of a robot	The robots should respond flexibly to unforeseen situations.	incorrect	The robots should be able to recognize relative importance of the information and knowledge.	incorrect	The robot should be able to find similarities and differences among things.	Incorrect	The robots should not be able to synthesize new ideas from old concepts.	correct
23	TF	A paradigm is a philosophy or set of assumptions and /or techniques which characterize and approach	TRUE							

		to a class of problems.								
24	MC	The correct flow of sensors to actuators is:	Sensors->perception->planning->modelling->task execution->motor control->actuators	incorrect	Sensors->perception->modelling->planning->task execution->motor control->actuators	correct	Sensors->planning->perception->modelling->task execution->motor control->actuators	Incorrect	None of the above	incorrect
25	TF	Shakey is the first AI robot.	TRUE							
26	MC	The best known architecture of the Hierarchical paradigms are the Nested Hierarchical Controller developed by Meystel and NIST real-time Control System(RCS) developed by	Tesla	incorrect	Sphero	incorrect	Albus	correct	Anybots	incorrect
27	MC	According to the biological sciences and from the information perspective, which one is not the part of human thoughts	Conscious	incorrect	Unconscious	incorrect	Subconscious	Incorrect	Superconscious	correct
28	TF	Gladiator is an uninhabited ground robots.	TRUE							
29	MC	Which one is not a kind of agent?	Hardware Agents	correct	Software Agents	incorrect	Human Agents	Incorrect	Robotic Agents	incorrect

30	MC	Which one is not an actuator?	Steering	incorrect	Speedometer	correct	Brake	Incorrect	Horn	incorrect
31	MC	McCarthy, Minsky, Claude Shannon, and Nathaniel Rochester are the researchers from area of	Machine Learning	incorrect	Robotics	incorrect	Artificial Intelligence	correct	Logic Theorist	incorrect
32	MC	IBM's deep blue was the first computer program to play	Mario	incorrect	Sudoku	incorrect	Snake Game	Incorrect	Chess	correct
33	MC	Which one is not a type of production system	A monotonic production system	incorrect	A commutative production system	incorrect	A non monotonic production system	Incorrect	None of the above	correct
34	MC	The generate-and-test is a: _____.	Depth first search	incorrect	Exhaustive search	incorrect	Binary first search	Incorrect	Both a) and b)	correct
35	MC	Which statement is false about CCD cameras?	CCDs consumes less power than CMOS	correct	A CCD camera was first used in the late 1960s.	incorrect	It captures and stores images in digital memory.	Incorrect	CCDs are found in photocopiers, security surveillance cameras, fax machines.	incorrect
36	TF	An optoelectronic sensor is a device that produces an digital signal proportional to the amount of light incident on its active area.	FALSE							

37	TF	The bi-modal histogram is used for image segmentation.	TRUE							
38	MC	Which one is not the feature extraction technique?	Chain codes	incorrect	Shape number	incorrect	Boundary length	Incorrect	Thresholding	correct
39	MC	"If there are multiple local minima in the error surface, then there is no guarantee that the procedure will find the global minimum." This statement is related to	Sum Squared Error	incorrect	Gradient Descent	correct	Activation Function	Incorrect	Support Vectors	incorrect
40	MC	Which range option is correct about sigmoid function?	[0, 1]	correct	(0, 1)	incorrect	(0, 1]	Incorrect	[0, 1)	incorrect
41	MC	Which of these is not a widely used simulator?	Arbotix Framework Development	incorrect	Stage	incorrect	Maxwell	correct	Gazelo	incorrect
42	MC	Robot operating system (ROS) is an _____ platform		incorrect	Application Development	correct	Interaction Design (ID)	Incorrect	None of the above	incorrect
43	MC	ROS has got tools for	Simulation	incorrect	Visualization	incorrect	Debugging	Incorrect	All of the above	correct
44	MC	ROS packages are maintained using _____.	VCS	correct	roscd	incorrect	roscd	Incorrect	None of the above	incorrect
45	MC	_____ is one of the 3D visualization tool.	sviz	incorrect	dviz	incorrect	rviz	correct	None of the above	incorrect
46	TF	There is a package	FALSE							

		named MoveIt for robot motion planning.								
47	TF	Actuators like Dynamixel servos are also supported in ROS .	TRUE							
48	TF	Modeling in ROS is performed using URDF.	TRUE							
49	MC	AMCL stands for	Advanced Monte Carlo Localization	incorrect	Adaptive Monte Carlo Localization	correct	Absolute Monte Carlo Localization	Incorrect	None of the above	incorrect
50	MC	Which one is not the part of ROS architecture?	The file system level	incorrect	The computational graph level	incorrect	The community level	Incorrect	The component level	correct
51	MC	Which of these is not a part of the ROS navigation Stack.	Gazebo	correct	Global_planner	incorrect	Local_planner	Incorrect	AMCL	incorrect
52	MC	gmapping provides .	Map data as a ROS Service	incorrect	Probabilistic localization system	incorrect	Laser based SLAM	correct	None of the above	incorrect
53	MC	Performance as per literature can be best achieved with robots that are	Square	incorrect	Circular	incorrect	Both a) and b)	correct	None of the above	incorrect
54	TF	EKF SLAM is one of the SLAM techniques.	TRUE							
55	TF	Monte Carlo localization is also known as random filter localization.	FALSE							

56	TF	There are three states in a phone.	TRUE							
57	MC	CCD stands for	Chip coupled devices	incorrect	Collision coupled devices	incorrect	charged couple devices	correct	None of the mentioned	incorrect
58	TF	An objective of high performance tele-operation is to give a human operator a sense of feel which can aid in the implementation of a remote task.	TRUE							
59	TF	The forward kinematics problem is quite complicated and there is complexity in deriving the equations.	FALSE							
60	TF	Force control is a central requirement if robot arms are to use tools or interact with workpieces in an unstructured environment.	TRUE							