

<b>Name:</b>	
<b>Enrolment No:</b>	

## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2020

<b>Programme Name:</b> B TECH (CSE+IOT&SC)	<b>Semester</b> : 8 <sup>th</sup>
<b>Course Name</b> : Designer of Smart Cities	<b>Time</b> : 03 hrs
<b>Course Code</b> : CSEG 479	<b>Max. Marks</b> : 100
<b>Nos. of page(s)</b> : 5	
<b>Instructions</b> : Attempt all 34 questions. All questions are compulsory.	

### SECTION A

S. No.		Marks	CO
Q 1	<p>Choose the best answer:</p> <p>1. A Smart city is an urban area that uses different types of electronic Internet of Things (IoT) sensors to collect data and then use insights gained from that data to manage assets, resources and services efficiently.</p> <p>2. A Smart city includes data collected from citizens, devices, and assets that is processed and analyzed to monitor and manage traffic and transportation systems, power plants, utilities, water supply networks, waste management, crime detection, information systems, schools, libraries, hospitals, and other community services.</p> <p>A. Only 1 is correct B. Only 2 is correct C. Both 1 &amp; 2 are correct D. None of all</p>	2	CO1
Q 2	<p>The Smart city concept integrates _____, and various physical devices connected to the IoT network to _____ the efficiency of city operations and services and connect to citizens.</p> <p>A. ICT &amp; Optimize B. IT &amp; Optimize C. ICT &amp; Maximize D. IT &amp; Maximize</p>	2	CO1
Q 3	<p>“Smart cities” as defined in PAS 180: 2014 Smart Cities. Vocabulary as:</p> <p>A. ‘...the effective integration of physical, digital and human systems in the built environment to deliver a sustainable, prosperous and inclusive future for its citizens.’</p> <p>B. “Regional competitiveness, transport and Information and Communication Technologies economics, natural resources, human and social capital, quality of life, and participation of citizens in the governance of cities.”</p> <p>C. "A Smart city is one that has digital technology embedded across all city functions."</p> <p>D. "A city can be defined as 'smart' when investments in human and social capital and traditional (transport) and modern (ICT) communication infrastructure fuel sustainable economic development and a high quality of life, with a wise management of natural resources, through participatory action and engagement."</p>	2	CO1
Q 4	<p>It has been suggested that a Smart city (also community, business cluster, urban agglomeration or region) uses information technologies to:</p>	2	CO1

	<ol style="list-style-type: none"> <li>1. Make more efficient use of physical infrastructure (roads, built environment and other physical assets) through artificial intelligence and data analytics to support a strong and healthy economic, social, cultural development.</li> <li>2. Engage effectively with local people in local governance and decision by use of open innovation processes and e-participation, improving the collective intelligence of the city's institutions through e-governance, with emphasis placed on citizen participation and co-design.</li> <li>3. Learn, adapt and innovate and thereby respond more effectively and promptly to changing circumstances by improving the intelligence of the city.</li> </ol> <p>A. Only 1 B. Both 1 &amp; 2 are correct C. Both 2 &amp; 3 are correct D. All 1, 2 and 3 are correct</p>		
Q 5	<p>A Smart city roadmap consists of which major components:</p> <ol style="list-style-type: none"> <li>1. Define exactly what is the community</li> <li>2. Study the Community</li> <li>3. Develop a Smart city Policy</li> <li>4. Engage The Citizens</li> </ol> <p>A. Both 1 &amp; 3 are correct B. Both 1 &amp; 2 are correct C. Both 2 &amp; 3 are correct D. All 1, 2, 3 and 4 are correct</p>	2	CO1
Q 6	<p>Strategies for smart cities should include:</p> <ol style="list-style-type: none"> <li>1. Clear communication</li> <li>2. A unifying vision through the whole-life cycle.</li> <li>3. Integration with policies and governance structure.</li> <li>4. Clear holistic understanding of how data is transferred and captured between technologies and systems and how it is used by decision makers.</li> </ol> <p>A. Both 1 &amp; 3 are correct B. Both 1 &amp; 2 are correct C. Both 2 &amp; 3 are correct D. All 1, 2, 3 and 4 are correct</p>	2	CO1
Q 7	<p>The smart cities initiative has been launched in how many cities in India.</p> <p>A. 10 B. 100 C. 500 D. 1000</p>	2	CO1
Q 8	<p>"Smart Cities Mission" was launched by Prime Minister of India on which date:</p> <p>A. 25 June 2016 B. 25 June 2015 C. 25 June 2014 D. 25 June 2017</p>	2	CO1
Q 9	<p>The objectives of building automation are:</p> <ol style="list-style-type: none"> <li>1. Improved occupant comfort &amp; efficient operation of building systems</li> <li>2. Reduction in energy consumption and operating costs</li> <li>3. Improved life cycle of utilities</li> </ol>	2	CO2

	<p>A. Only 1 and 2  B. Only 2 and 3  C. Only 1 &amp; 3  D. All 1, 2 &amp; 3</p>		
Q 10	<p>Almost all multi-story green buildings are design to accommodate a BAS for the:</p> <p>1. Energy conservation characteristics  2. Air conservation characteristics  3. Water conservation characteristics</p> <p>A. Only 1 and 2  B. Only 2 and 3  C. Only 1 &amp; 3  D. All 1, 2 &amp; 3</p>	2	CO2
Q 11	<p>Lighting can be turned _____with a building automation or lighting control system based on time of day, or on occupancy sensor, photo-sensors and timers.</p> <p>A. On  B. Off  C. Dimmed  D. On, Off, or Dimmed</p>	2	CO2
Q 12	<p>AHU stands for:</p> <p>A. Air High units  B. Arithmetic Handling units  C. Air Handling units  D. Arithmetic High units</p>	2	CO2
Q 13	<p>The chilled water system in a Building Automation System (BAS) will have:</p> <p>A. Chillers  B. Pumps  C. Both A and B  D. None of the above</p>	2	CO2
Q 14	<p>In a Building Automation System, an air conditioning system, or a standalone air conditioner, provides _____ for all or part of a building.</p> <p>A. Cooling Control  B. Humidity  C. Cooling and humidity control  D. None of the above</p>	2	CO2
Q 15	<p>In a Home Automation system, <i>Controller</i> acts as:</p> <p>A. The Brain of the System  B. The Sensory Organs of the Home  C. How the Internal Communication Occurs  D. Get Notified Instantly</p>	2	CO2
Q 16	<p>In a Home Automation system, <i>Smart Devices</i> acts as:</p> <p>A. The Brain of the System  B. The Sensory Organs of the Home  C. How the Internal Communication Occurs  D. Get Notified Instantly</p>	2	CO2
Q 17	<p>A domestic robot is a type of service robot, an autonomous robot that is primarily used for:</p> <p>A. Household chores  B. Education  C. Entertainment/therapy</p>	2	CO2

	D. All above		
Q 18	<p>Today, how much percent of people worldwide live in cities, which is forcing to have Smart City project all around the world:</p> <p>A. 44%</p> <p>B. 54%</p> <p>C. 64%</p> <p>D. 74%</p>	2	CO3
Q 19	<p>How many countries world wide have agreed upon the agenda of the Sustainable Development Goals (SDGs), in September 2015 at the United Nations?</p> <p>A. 163</p> <p>B. 173</p> <p>C. 183</p> <p>D. 193</p>	2	CO3
Q 20	<p>What makes smart cities successful?</p> <p>A. Pervasive wireless connectivity &amp; Open data</p> <p>B. Security you can trust in</p> <p>C. Flexible monetization schemes</p> <p>D. All above</p>	2	CO3
Q 21	<p>Which out of the following is <b>not</b> among the four core security objectives of the Smart Cities:</p> <p>A. Availability</p> <p>B. Integrity</p> <p>C. Confidentiality</p> <p>D. Sustainability</p>	2	CO3
Q 22	<p>Successful smart cities follow which steps:</p> <p>A. Collection &amp; Analysis</p> <p>B. Communication &amp; Action</p> <p>C. Both A and B</p> <p>D. None of the above</p>	2	CO3
Q 23	<p>Which out of the above is not an example of major smart cities in the world?</p> <p>A. Barcelona, Spain</p> <p>B. Tokyo, Japan</p> <p>C. Reykjavik, Iceland</p> <p>D. Colombo, Srilanka</p>	2	CO3
Q 24	<p>Which is the disadvantage of existing ongoing system of non-IoT based Smart Street Light System:</p> <p>A. Manual Switching off/on of Street Lights &amp; More Energy Consumption</p> <p>B. High expense &amp; More manpower</p> <p>C. Both A &amp; B</p> <p>D. None of the above</p>	2	CO3
Q 25	<p>Basic H/w and S/w requirements for having a Traffic Control using IoT includes which out of the following:</p> <p>A. Microcontroller (Arduino Mega 2560 or Arduino Uno)</p> <p>B. LEDs</p> <p>C. IR Sensor &amp; Jumper Wires</p> <p>D. All above</p>	2	CO4
Q 26	<p>A parking IoT management system can be:</p> <p>A. A one-stop-shop that unites drivers</p>	2	CO4

	<p>B. Law reinforcement organs C. Parking facility managers D. All above</p>		
Q 27	<p>IP cameras have become a top target for hackers because of:</p> <p>A. Their relatively high computing power B. Good internet traffic throughput C. Both A &amp; B D. None of the above</p>	2	CO4
Q 28	<p>Which statement out of the following is correct about IoT applications in waste management?</p> <p>A. IoT applications in waste management are engaging citizens and cities alike in the project of making our waste practices more sustainable. B. Optimizing garbage collection routes based on actual disposal unit fill levels—as measured by fill level sensors—is one such application that's proving to be quite impactful. C. Truly transforming waste management will require deeper collaboration between public and private stakeholders. D. All above</p>	2	CO4
Q 29	<p>The success of any IoT-enabled application using IoT data to Recycle Products lies in:</p> <p>A. The collection of a vast amount of data, often in real-time B. The distillation of those data into insights on which users can take action C. Both A &amp; B D. None of the above</p>	2	CO4
Q 30	<p>IoT applications in waste management are improving the scenario by giving sanitation workers insight into the actual fill level of various disposal units, whose loads can vary by:</p> <p>A. the day B. the week C. the season D. All Above</p>	2	CO4
<b>SECTION B</b>			
Q 31	<p>How IoT will play an important role in Traffic Management for Smart Cities? Give a case study in support of your answer. Give hardware and software requirements of your project in which Traffic Management for Smart Cities is to be designed. Explain in detail the necessary steps for the above project along with cost considerations.</p> <p style="text-align: center;">OR</p> <p>What challenges and concerns you see in the development of a smart city? Propose solutions to these challenges and concerns by taking IoT based hardware/software into considerations.</p>	10	CO3
Q 32	<p>Design an IoT based applications for the treatment of <b>Waste Management</b> as a part of Smart City project. Give complete hardware and software specifications along with cost considerations of the project. Specify issues, if any, like legal, ethical etc. How IoT data shall be used to recycle products? Clearly specify how IoT technology can help where humans struggle.</p> <p style="text-align: center;">OR</p> <p>Design an IoT based applications for the treatment of <b>Air Pollution</b> as a part of Smart City project. Give complete hardware and software specifications along with cost considerations of the project. Specify issues, if any, like legal, ethical etc. How IoT data shall be used to recycle CO<sub>2</sub> emissions? Clearly specify how IoT technology can help where humans struggle.</p>	10	CO4
<b>SECTION-C</b>			
Q 33	<p>As an IoT engineer how would you go for Home/Building Automation using IoT project. Give hardware and software requirements of your project. Explain in details the necessary steps for the above project along with cost considerations.</p>	10	CO2
Q 34	<p>(a) Name, discuss and comment over the major cities in the world which started the Smart City project firstly in terms of primary focus areas, technology used and achievable that they achieved as of now. (b) "100 Smart Cities Mission" was launched by Govt. of India few years back. Comment over the progress held by now in any two cities of India.</p>	10	CO1

