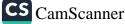
04/12/20 SISH - 255, Qn. 2 (a) Define ceramics and nano-ceramic materials. Why the name - ceramics show better properties than their ceramic countreparts? Write The applications of ceramics materials. · Ceramic: Ceramic materials are anorganic, non-metallic golids that are generally hered, brittle, and resistant to corrosion. They are usedy made from natural or synthetic materica Such as cany, silicates, or onides which are pocessed at high . femperatures to achieve the desired properties. Nano- Ceramic Materials: Nano- cirgmic materials ave a class of ceramic materials that



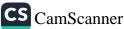
have at least one dimention in the naniscale range (typically 1-100 naw meters). These mainales show Unique properties, such as enhanced mechanical strugth, toughness, and thermal resistance, due to their nanascale structure. Reasons why Name - ceramics Show better properties than their ceramics counterparts: These are some reasons why. Nano- ceramics show better properties them their coramics counterparts. They are as follows: · Increased Surface Area: Nan- ceramics have a larger surface Area - to - volume vatio, which enables there to inferact more effectively with their environ-ment. It results in reaching, increased length and



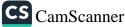
beller thermal conductivity. · Improved Mechanical Properties; The namescale structure of ugue cersmics allow for the formation of stronger and more Uniform bonds between pasticles. · Reduced defects of Pores: Naw Ceramics have fewer dependent and poves compared to their Ceramic counter asts. . Applications of Ceramic materials. mere ave certain applications which are listed below: Coop wave and tablewave Construction and building materials Electrical and Electronic components Medical and Biomedical Application Automative Applications.



Mention full qs statement for proper evaluation; without that, these are just notes and cannot (be a variable nharks A black hole is a region in space where the gravitational pull is so strong that nothing, including light, can unpe. Formation of Black Holes: Black Holes are formeel when a massive star Juns out of guel and dies. If the star is massive enough ( about 3-4 times the size of the sun), its granty will Collapse the star in one stelf Causing a Supernova explosion. If the star is even more massive (about 10-20 times the Since of the Sun), the collepse will confinue, and the star will shrink down to a time point called 9 Singularity.



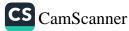
Discovery of Black Holes: Black Holes are discovered through indirect methods, as they do not emit any electromagnetic radiation, making them invisible to the felescope. Here are some discovincel black holes ways that are given below: · n-rays and lique Rays. · Radio Waves. - Star Moto . Gravitational Waves. · Astrometry. Henre, these methods have allowed astronomens to discours thousands of black hole in the Universe.



(c) Applications of Electromagne-tic radiations: These are two applications of each of the following electromagnetic radiations which are as follows: i) Ultraviolet; · Disinfection and Sterilization: UV light is used to distinct and Steriliae Surfaces, air, and wafe. It is mostly used in hospitals, Caboratories, and food processing industries. Medical Prestment: It is used to the various medical undificus, like Jaundice, proviasis, and vitilizo. ii) Infra-red, · Thermal Imaging: JR radiation is used



Ð thermal imaging commans to deput femperature differences in objects of environment Such as predicative maintaname and building inspection · Heating and Drying: IR. is used in various industrial and commercial applications for heating and drying purposes, such as industrial rying: to dry paint, Wating, and info. iii) Microwaves: · Heating and cooking: Microwaves are widely used in household miscrowave over for heating and cooking. · · · Wireless Communications: The ave also wed in Wireless communication Systems, Such as safellite communications, cellular networks and wireless local area networks ( WLANS).



11 8 iv) Radiowaves: · Wireless communication: Radiowaves are week in wirefess communication systems, Such as vadio brockasting, mobile phones and safellife communications. · Radar Technology: They are also used in raday technology to defit and track objects, like aircragt, ships, and weathir patterns. v) X-rays · Medical Imaging: X-rays are widely used in medical imaging to produce images of the internal structures of the body. They are also weed to digenose brue Bactures, lung diseases, and fumoso.



Þ Security Screening: 21-rays are used in Security Screening application, such as airpost security scannen. (d) Wildsire: Wildfire is an ununholled give that occurs in wildland areas, such as goversts, grassfands; and brushlands Types of Willfire: There are some types of wildfives which are explained as under: i) Surface Fires: These fives by vegetation and other matrials on the surgace like grass, leaves, and small prize. ii) Ground Fires: These fires burn Underground Vejetation and other materials, Such



B as roots, stamps, and other burned Jucks. iii) Ranning Fires. These fives often spread quickly doiven by wind, and are diglicult to control. IV Spot Fires: These fires start as small, isolated blarer, usually ignited by embers or sparks, and they cam spread quickly if not contained. · Causes of Wildfives: There are some causes of willfives which are listed below, · Natural causes that include, lightning, Spontenous combastion, Volcemi achivity · Humans cause wild fives that incluele, Arson, cardesmess and



(l)quidantal ignition etc. · Preventions Here are some prevention measures to reduce the risk of wild gives: Fully Extinguishing Compfires. . Cigarretes Dispose q Being mindful to five vestictions. Creating defensible space. Ø Moniforing weather conditions and so an

