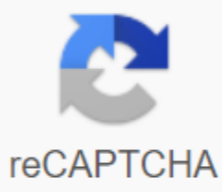




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Nwcg s 290 test answers

Use the Severe Fire Behavior Potential table to answer the questions below. Questions What do you expect to happen if the 1-hour fuel moisture content dropped to about 12%? (Choose the best answer.) The correct answer is c. The probability of ignition will increase. Drop fuel moisture from 1 hour to the range of 11-14%, and the ignition becomes average with easy burning conditions. At 1 hour of fuel humidity below 10%, the risk of ignition becomes high. Based on the Severe Fire Potential table, what type of burning conditions should be anticipated when the 1-hour fuel humidity is below 7%? (Choose everything that applies.) The answers are all of the above. Fuel humidity values of 1 hour between 5 and 7% tend to result in dangerous burning conditions that can cause long-distance stains and ignite overhead fuels. Fuel humidity of 1 hour below 5% represents critical burning conditions, with rapid spread of point fires and the likelihood of extreme fire behavior. Use the video control above to play the movie. Question 1 Watch this video, which was made during a survey conducted on the wildfire interface in Canada. The camera is mounted on the balcony of a simulated cabin that survived the fire. The temperature is graphed in degrees Celsius while the fire burns. What processes can be observed or implied in this video? (Select everything that applies.) The correct answers are b, c, d and e. Near the beginning of the clip, fire marks can be seen falling into the area. In addition, smoke and steam are emitted by trees paraded in front of the main fire, indicating that fuels are approaching their ignition point. The change of direction of this smoke is due to the erratic winds that are present. The fire moves rapidly and demonstrates extreme behavior. However, the swirls of fire are not observed, and it is not possible to observe the convective plume from this location of the camera. From a safety standpoint, this video illustrates why you should stay in your deployed fire shelter if close to wood, because convective and radiant heat take a long time to dissipate. DO NOT lift the edge of your shelter to take pictures! The extreme behavior of the fire can lead to fire deaths. Tragedy fires, those in which lives have been lost, have common characteristics that distinguish them from other forest fire events. Carl C. Wilson published a study in 1976 titled Fatal and Near Fatal Forest Fires – The Common Denominators. These common features included: Relatively small fires or deceptively silent areas of large fires Light fuels such as grass, herbs and light brush Unexpected change in the direction of the or increase in wind speed. Topographic conditions leading uphill Wilson found that such fires start as benign and seem routine, but suddenly explode or explode. In addition, the alignment of other common characteristics led to catastrophic results. Situations Situations that the fire was burning on light fuels and the winds changed or increased and aligned with the topography resulted in sudden and dramatic changes in the behavior of the fire. Common Denominators are also found in the Incident Response Pocket Guide (IRPG). Question 2 During what became known as the Esperanza fire, fierce Santa Ana winds blowing up to 60 miles per hour spread flames that grew to 70 feet and 1300°F, finally devouring 60 square miles. The fire moved so fast and with such intensity the five firefighters didn't have time to deploy their fire shelters. The crew was positioned at the head of a valley perfectly aligned with the wind. The flames that killed these men were especially ferocious because they were burning inside dry, dense and ripe chaparral at their low seasonal moisture content. Which of the following characteristics of the tragedy fires were present in the Esperanza fire? (Select everything that applies.) The correct answers are b, c, and d. Dry fuels, strong winds of 40 mph, and a position at the head of a valley aligned with high winds are the features that have combined to overwhelm the fire crew. This photo was taken from the crash site looking down the steep gorge that aligned with the winds that caused the fire that broke out the crew. Intermediate Fire Behavior in Wildland, Pre-Qualification Test S-290 Name _____ Score _____ Home Unit _____ Part 1 – Flame and Your Personal Rate of Propagation. 1. Your walking distance time = _____ Your race _____ distance time = _____ Your run _____ distance time = _____ What _____

was your established distance? 5. From the FLAME publication, if a fire experiences a 10-fold increase in wind (EWS ratio) and the fire moves from garbage to crown, what is the expected rate of propagation increase? 6. From flame publishing, what factors drive large and sometimes rapid changes in propagation rate? 1 Part 2 – Basic Firefighter Math (Make sure and show your work, not just the answer.) 1. You are asked to prepare five gallons of mixed pump gasoline for a Mark 3 pump. The appropriate fuel mixture is 32 to 1 (32:1) or 32x (times) the gas parts for a part of the oil. How much 2 cycle oil (oz) is needed to prepare five gallons of mixed fuel? 2. The rate of spread advance of a wildfire in the wild is 20 times (20x) the spread support rate. Write this as a fraction and proportion notation. 3. Your crew chief instructs you to pick up tools from the supply. He wants 3x the number of pulaskis for shovels. There are 20 people on your crew; each crew member is issued only one tool. How many pulaskis and shovels do you ask for from the supply? 2 4. Your salary is \$12 an hour and you worked 60 hours (flat rate, no overtime pay) on Uncle Sam's fire. Taxes and other deductions from your salary total \$216. A. What is the retention ratio for what you you Simplify. A. What percent is being withheld from your salary? A. How many hours did you work just to pay for the retentions? A. What is the proportion of hours worked versus number of hours to pay for retentions? 5. If there is a change of 1200 feet in elevation, at a horizontal distance of one mile, what is the slope %? 6. If you have an 18 increase in elevation over a 1.80 m stick, what would be the slope? 3 Part 3 - Maps 1. Draw a profile (horizontal line) showing elevations from point a to point b. At each contour crossing, draw a vertical line to the corresponding elevation. Place a dot on the correct height profile and connect the dots. Using the map provided: 2. How many inches per mile does the map represent? 3. What is the scale of the map of this map? With inches as a unit of measure, what does that reason mean? 4 4. An inch on this map equals how many feet on the ground? 5. What is the contour range of your map? 6. What is an index outline? 7. Choosing from the Map Resource List in the table below, write in the map feature displayed for each point. Corresponding Point Map Table Lists a north aspect B East Aspect C Bench Mark D Canyon Bottom or Valley E West Aspect F Intersecting Drainage G Ridgeline H South Aspect I Bench Mark (free response) Intermittent Flow J Hill Top 5 Part 4 – Visualization exercise Two hours ago, you initially observed front fire scattered between two poles of about taking 10 minutes. Currently you notice that it is taking only 4 minutes to burn between the fence poles. Fuel and topography haven't changed. 10. 2. Your crew is working 8 fence poles in front of the main fire, and requires another 30 minutes to complete the line, and another 5 minutes to get out of the way safely. Assuming all things remain constant: a. Will the crew complete the line before the fire reaches its location? Show me your calculations. B. Can they get out safely? C. What else could you do to complete the line section and still give time to reach the security zone? D. What other indicators of fire behavior would help in your decision? From your responses in Part 1 (your Spread Rate), what is the change, expressed as proportion, from walk to run? How many times faster have you been able to run the distance? 6 Part 5 - Basic Principles of Fire Behavior Test 1. Three environmental factors that affect the behavior of wildfire are: fuels a. b. c. d. d., solar radiation, meteorological fuels, RH, temperature fuels, climate, large fuel topography, fine fuels, topography 2. List four topography factors that can influence fire ignition and spread. 3. List five climatic factors that can produce rapid spread of 4. What is the general wind? 5. What are local winds? Give two examples. 6. When a cold front or storm is expected, what is the most significant climate change you can expect? 7 7. Winds associated with a cold are stronger when? 8. Describe the intensity and direction of winds produced by a storm. 9. Describe the effect that relative humidity has on the behavior of wildfire. 10. List four visible indicators of a stable air mass, and four visible indicators of an unstable air mass. Unstable Stable 8 Part 6 - Fuel Groups/Models Test 1. What are the four fuel groups of the Fire Behavior Prediction System (FBPS)? 2. For each fuel group, how many fuel models are there in each? 3. Give the four categories of fuel watches used to classify dead fuel. Then give the range of fuel sizes for each category. 4. What size of fuel is most responsible for the spread of fire? 9 5. List seven fuel characteristics of fuels that affect the behavior of fire. 6. Which fuel models have a live fuel load? 7. Which fuel group is most common in the area in which you work? 10 Part 7 - Fire Line Manual - Appendix B 1. What is the moisture range of extinction within each of the four fuel groups? On which appendix page did you find your information? 10. Using the Fire Behavior Characteristics Chart for light fuels found on page B-57, list the main marked flame length divisions and associated intensities of the line of fire. For each of the major divisions, list interpretations that affect firefighters' tactics and safety. 3. The rate of spread of a fire is 10 chains per hour, with fire lengths of three feet. 4. A. What is Heat per Unit Area? B. What is the Intensity of the Line of Fire? C. There is a 10-fold increase in the spread rate for this afternoon. What is the expected flame length and fire intensity? At the moment, light winds are blowing through the fire, but in the distance, a large flag is fully extended. Looking at the treetops, the seedlings are swinging violently, even some larger trees swing visibly. Use the Beaufort scale to estimate the wind speed of 20 feet in Appendix B and give an estimated speed range based on these observations. What can this indicate later? 11 11

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