

## سائنسی طریقہ کار کا استعمال

All of us have benefited (فائدہ اٹھایا) greatly (بہت زیادہ) from the use of scientific (سائنسی) method (طریقہ کار) in solving (حل کرنے) problems such as those dealing with (سے متعلق) the maintenance (برقرار رکھنا) of health, the production (پیداوار) and preservation (محفوظ بنانا) of foods, the construction (تعمیر) of our homes, and the improvement (بہتری) in communication (مواصلات) and transportation (نقل و حمل). Not only have our ways of living changed, but people themselves have also been changed. Today we are better (بہتر طور پر) able (قابل) to explain happenings (واقعات) which used to be considered strange and mysterious (پراسرار). Although (حالانکہ) there is still need for improvement (بہتری), we are now generally (عموماً) less fearful (خوفزدہ) than our fathers (آباء) and grandfathers (اجداد) were. We are also more critical (تنقیدی) in our thinking (سوچ) than our ancestors (آباؤ اجداد).

This lesson should help you understand (سمجھنا) how the use of scientific method has improved living (زندہ رہنے کے) conditions (حالات) and changed people. It should also help you understand how you can make better use of the scientific method in your everyday living (روزمرہ زندگی).

**Better Control of Disease:** If you had been born two hundred years ago, you would have had about (تقریباً) one chance (موقع) in eight of living to be one year old. In other words (بالفاظ دیگر) in those days about seven out of eight babies died before reaching their first birthday (سالگرہ).

Suppose (فرض کریں) you had been an unusually (غیر معمولی) strong (طاقتور) little fellow and had lived through that first year. Very likely (امکان), before you were six years old, you would have had smallpox (چچک), and by the time you reached the age of twelve, you would undoubtedly (بلاشبہ) have had measles (خسرہ), whooping cough (خناق), scarlet fever (سرخ بخار), and diphtheria (زرد بخار). Even then your battle (جنگ) for life was not over. Yellow fever (زرد بخار),

ہم سب سائنسی طریقہ کار کے استعمال سے اپنے مسائل کے حل میں بہت زیادہ فائدہ اٹھا چکے ہیں جیسا کہ صحت سے متعلق، خوراک کی پیداوار اور اس کو محفوظ کرنا، ہمارے گھروں کی تعمیر، اور ذرائع آمدورفت اور ذرائع ابلاغ میں ترقی۔ نہ صرف ہمارا ذہن بہن بدلا بلکہ لوگ خود بھی بدل گئے ہیں۔ آج ہم واقعات کی بہتر وضاحت کرنے کے قابل ہیں جنہیں عجیب اور پُر تجسس سمجھا جاتا تھا۔ اگرچہ ابھی بھی ترقی کی ضرورت ہے لیکن ہم اپنے آباؤ اجداد سے زیادہ تنقیدی سوچ رکھتے ہیں۔

یہ سبق آپ کو سمجھنے میں مدد کرے گا کہ کیسے سائنسی طریقہ کار کے استعمال نے رہن بہن کو بہتر بنایا اور لوگوں کو بدلا۔ یہ آپ کو یہ بھی سمجھنے میں مدد کرے گا کہ کیسے آپ سائنسی طریقہ کار کو اپنی روزمرہ زندگی میں بہتر طور پر استعمال کر سکتے ہیں۔

بیماریوں پر بہتر قابو: اگر آپ دو سو سال پہلے پیدا ہوئے ہوتے تو آپ کو آٹھ میں سے صرف زندہ رہنے کا ایک موقع ملتا۔ دوسرے لفظوں میں، اُن دنوں آٹھ میں سے سات بچے اپنی پہلی سالگرہ تک پہنچنے سے پہلے مر جاتے تھے۔

فرض کریں کہ آپ ایک غیر معمولی مضبوط بچے تھے اور اُس پہلے سال میں زندہ رہے۔ عین ممکن ہے کہ چھ سال کا ہونے سے پہلے آپ کو چچک ہو جاتی، اور بارہ سال کی عمر تک پہنچتے ہوئے آپ کو بے شک خسرہ، کالی کھانسی، سرخ بخار اور خناق ہو جاتی۔ حتیٰ کہ تب بھی آپ کی زندگی کی جنگ ختم نہ ہوتی۔ زرد بخار، ملیریا، ٹائفیس، ہیضہ، ٹائیفائیڈ بخار اور حتیٰ کہ زکام ایک بار شروع ہو

malaria, typhus (سرخ دانوں والا بخار), cholera (ہینہ), typhoid fever (معیادی بخار), and even influenza (زکام), once started, spread (پھیلنا) through a community (معاشرہ، ہستی). Life was most uncertain (غیر یقینی). A person who lived to be more than thirty years of age was indeed (بلاشبہ) fortunate (خوش قسمت). It is unbelievable (نا قابل یقین) that such conditions could have existed (موجود تھے) so short a time ago (پہلے). Today babies are born in hospitals where there is little likelihood (امکان) of their getting a disease. Young people (چھوٹے بچے) are treated (علاج کیا جاتا ہے) to protect (بچاؤ) them against smallpox, diphtheria, and typhoid fever. Today a person can expect (توقع کرتا) to live to be almost seventy years old. In other words, more than thirty years have been added (شامل کر دیئے گئے) to the expected (متوقع) length of man's life. These changes have been made possible (ممکن) by use of the scientific method to solve (حل کرتا) such problems as the causes (باب) of disease and its prevention (روک تھام).

Better Sanitary Conditions: It is difficult (مشکل) to imagine (تصور کرنا) what sanitary (صفائی ستھرائی) conditions in some of our larger cities were like only one hundred years ago. In to the narrow (تنگ), unpaved (جھکی) , and poorly (ناقص) drained (نکاس کردہ) city streets household (گھریلو) garbage (کوڑا کرکٹ) and other refuse (فضلہ) were thrown.

Animals wandered (پھرتے تھے) through the streets feeding upon (خوراک لیتے ہوئے) the garbage. Outdoor toilets (بیٹ الخلاء) were common (عام) many of them situated (واقع تھیں) where human wastes (فضلات) drained (بہہ جاتے) into wells from which people obtained (حاصل کرتے) drinking water.

Today our city streets are paved (پکی) and well drained, and they are cleaned regularly (باقاعدگی). It is against (خلاف) the law (قانون) to throw garbage in the streets. Sewage (گندہ پانی) from all sections (حصوں) of a city is carried (لے جایا جاتا ہے) through sealed (نہر باسہر بہر) pipes to disposal (گندہ کی تلخی) plants (کارخانے). Through the use of the scientific method it has been demonstrated (عملی مظاہرہ) that unsanitary (غیر صحت بخش) conditions cause the spread of diseases like typhoid fever, cholera and dysentery (تپش). Today most city governments have departments (شعبے) of sanitation (صفائی) which keep the cities clean and thereby prevent (بچاؤ کرتے ہیں) the spread (پھیلاؤ) of certain (خاص) diseases.

A century ago it was common (عام) practice (رواج) in many

جاتے تو پوری ہستی میں پھیل جاتے۔ زندگی بہت غیر یقینی تھی۔ ایک آدمی جو تیس سال سے زیادہ زندہ رہتا تھا واقعی خوش نصیب ہوتا تھا۔ یہ نا قابل یقین ہے کہ ایسے حالات اتنے کم عرصہ پہلے تھے۔ آج بچے ہسپتالوں میں پیدا ہوتے ہیں جہاں انہیں کوئی بیماری لگنے کا بہت کم اتفاق ہوتا ہے۔ چھوٹے بچوں کو چھچک، خناق اور ٹائیفائیڈ بخار سے بچانے کے لئے علاج کیا جاتا ہے۔ آج ایک شخص ستر سال سے زیادہ زندہ رہنے کی امید رکھ سکتا ہے۔ دوسرے لفظوں میں، آدمی کی متوقع عمر میں تیس سال کا اضافہ کر دیا گیا ہے۔ یہ تبدیلیاں سائنسی طریقہ کار کے استعمال سے ممکن ہو سکی ہیں ایسے مسائل کا حل جیسا کہ بیماریوں کی وجوہات اور ان سے بچاؤ۔

صفائی ستھرائی کے بہتر انتظامات: یہ سوچنا بھی مشکل ہے کہ صرف ایک سو سال پہلے ہمارے بڑے شہروں میں سے کچھ میں نکاسی کے انتظامات کیسے تھے۔ کچی اور ناقص نکاسی آب والی شہر کی گلیوں میں گھر کا کوڑا کرکٹ اور دوسرے فضلات پھینکے جاتے تھے۔

جانور کوڑا کرکٹ سے خوراک لیتے گلیوں میں گھومتے پھرتے تھے۔ گھر سے باہر کے بیٹ الخلاء عام تھے۔ ان میں سے بہت سے وہاں واقع ہوتے تھے جہاں سے انسانی فضلات کنویں میں بہہ جاتے تھے جہاں سے لوگ پینے کا پانی حاصل کرتے تھے۔

آج ہمارے شہر کی گلیاں پکی اور اچھی ٹالیوں والی ہیں اور انہیں باقاعدگی سے صاف کیا جاتا ہے۔ شہر کے تمام حصوں سے گندہ پانی بند پائپوں سے فیکٹریوں میں ضائع کرنے کے لئے لایا جاتا ہے۔ سائنسی طریقہ کار کے استعمال سے یہ پتہ لگایا گیا ہے کہ نکاسی کے گندے انتظامات ٹائیفائیڈ بخار، ہینہ اور تپش جیسی بیماریوں کے پھیلنے کی وجہ بنتے ہیں۔ آج زیادہ تر شہری حکومتیں نکاسی کے محکمے رکھتی ہیں جو شہر کو صاف رکھتے ہیں اور اس طرح خاص بیماریوں کے پھیلنے کو روکتے ہیں۔

ایک صدی پہلے بہت سے شہروں میں گھر کے

cities to bring water by the bucketful (بالٹی بھر کے) for household use. Water had to be carried a considerable (کافی) distance (فاصلہ) from the well (کنواں) to the home. It was, therefore used very sparingly (کفایت شعاری سے) for bathing and cleaning purposes (مقاصد). Often it came from sources (ذرائع) that contained (خامل تھے) disease-producing germs.

Towns and cities today have water systems that usually (عموماً) provide (مہیا کرتے ہیں) water enough (کافی) for household use. One of the most important (اہم) problems in the growth (بڑھتے چولتے) of cities has been to provide sufficient (کافی) water to meet (پورا کرتا) the many needs (ضروریات) of an increasing (بڑھتی ہوئی) population (آبادی). Los Angeles has solved the problem by bringing water to the city from the Colorado River, 544 kilometers away. Carried (لے جایا گیا) through a pipe line, or aqueduct (آب). (ریز, a thousand million litres of water are delivered (فراہم کیا جاتا ہے) to the district (ضلع) daily. This is a remarkable (غیر معمولی) advance (ترقی) from the bucket system (بالٹی کا نظام) of supplying homes with water.

More Food and Better Food: Changes (تبدیلیاں) have taken (لے لی ہیں) place (دور پذیر ہوئی ہیں), too, in our eating habits (عادات). Through (کے) the use of science we have learned (سیکھ گئے ہیں) that it is healthful (صحت بخش) to eat many kinds (اقسام) of food, and we have learned how to provide (مہیا کرتا) ourselves with a variety (مختلف طرح کا) of foods throughout (کے دوران) the year. People who lived a century ago probably (غالباً) enjoyed (لطف اندوز ہوئے تھے) eating as much as we do today, but they could not have as many different kinds of food. Most of their foods had to be produced (پیدا کئے جاتے تھے) on their own (اپنے) farms (کھیتوں) or in their own gardens (باغات). Since fresh vegetables could be obtained (حاصل کی جاتی تھیں) only during the growing (اگانے کا) season (موسم), people living in cold climates (آب و ہوا) had none during the winter (سرما) months. Thrifty (کفایت شعاری) housewives preserved (محفوظ کر لیتی تھیں) their home-grown (گھر کی اگائی ہوئی) vegetables and fruits by canning (اچار ڈال کر), pickling (ڈبوں میں بند کر کے), or drying (خشک کر کے) them for use during the cold weather. Meats were preserved by salting (نمک لگا کر) and drying or by freezing (جمد کر کے). Sea foods were generally (عموماً) available (دستیاب) only along the coast (ساحل سمندر),

استعمال کے لئے بالٹیوں کے ذریعے پانی لانا عام عمل تھا۔ پانی کافی فاصلے سے کنویں سے گھر تک لانا پڑتا تھا۔ اس لئے اسے نہانے اور صفائی کے مقاصد کے لئے بہت کم استعمال کیا جاتا تھا۔ اکثر اسے ایسے ذرائع سے حاصل کیا جاتا تھا جس میں بیماریاں پیدا کرنے والے جراثیم ہوتے تھے۔

قبیلے اور شہر آج پانی کے نظام رکھتے ہیں جو اکثر گھریلو استعمال کے لئے کافی پانی مہیا کرتے ہیں۔ شہروں کی نشوونما میں اہم ترین مسائل میں سے ایک بڑھتی ہوئی آبادی کی بہت سی ضروریات کو پورا کرنے کے لئے کافی پانی مہیا کرنا ہے۔ لاس اینجلس نے یہ مسئلہ ۵۴۴ کلومیٹر دور، دریائے کولوراڈو سے شہر میں پانی لاکر حل کیا۔ ایک ہزار ملین لیٹر پانی روزانہ پائپ لائن کے ذریعے قبیلے تک پہنچایا جاتا ہے۔ یہ بالٹیوں کے نظام سے گھر میں پانی لانے سے ایک قابل ذکر ترقی ہے۔

زیادہ خوراک اور بہتر خوراک: ہماری کھانے کی عادات میں بھی تبدیلیاں آئی ہیں۔ سائنس کے استعمال سے ہم نے سیکھا ہے کہ بہت سی قسم کی خوراک کھانا ہمارے لئے صحت افزا ہے، اور ہم نے سیکھا ہے کہ کیسے پورا سال اپنے آپ کو مختلف قسم کی خوراک مہیا کرنی ہے۔ وہ لوگ جو ایک صدی پہلے رہتے تھے شاید کھانے سے اتنا ہی لطف اندوز ہوتے تھے جتنا آج ہم ہوتے ہیں لیکن وہ اتنی مختلف قسم کی خوراک نہیں رکھتے تھے۔ ان کی زیادہ تر خوراک ان کی اپنی زمینوں یا اپنے باغات میں اگائی پڑتی تھی۔ تازہ سبزیاں صرف اگنے کے موسم میں حاصل کی جاسکتی تھی۔ ٹھنڈے علاقوں میں رہنے والے لوگوں کے پاس سردیوں کے موسم میں کھانے کے لئے کچھ نہیں ہوتا تھا۔ کفایت شعاری گھریلو بیویاں اپنے گھر میں اگی ہوئی سبزیوں اور پھلوں کو ڈبے میں بند کر کے، نمک لگا کر یا خشک کر کے سرد موسم میں استعمال کے لئے محفوظ کر لیتی تھیں۔ گوشت کو نمک لگا کر اور خشک کر کے یا جب اتنا ٹھنڈا موسم ہوتا تھا تو جما کر محفوظ کیا جاتا تھا۔ سمندری خوراک صرف ساحل

fish and shell-fish (جمینکا) could be eaten (کھائے جاسکتے تھے) soon after they were caught (پکڑے جانے کے).

Regardless (قطع نظر) of where people live today, they can obtain (حاصل کرتا) some fresh (تازہ) fruits, meats and vegetables throughout the year. By the quick-freeze (تیزی سے منجمد) method, vegetables, fruits, sea-foods, and meats of various (مختلف) kinds can be preserved (محفوظ) so that they are both nutritious (صحت بخش) and enjoyable (مذاق بخش). Modern (جدید) methods of selecting (منتخب کرنا), grading (درجہ بندی), and processing (عمل میں سے گزارنا) foods have removed (زور کر دیا ہے) the risk (خطرہ) or danger of poisoning (زہر آلود ہونا) from canned (بند ڈبے کے) foods, dehydration (پانی خشک کرنا), or the removal (ختم کرنا) of water from such foods as milk, eggs, potatoes, and apples, has proved (ثابت ہوا ہے) a practical (عملی) method of preservation.

Our eating habits are not the only things in our lives changed by the use of science. Because we have used science to learn more about the processes (عمل کی جمع عوامل) and materials (اشیاء) in our surroundings (ارد گرد) and about the methods of controlling (تعمیر کرنا) them, we have been able (قابل) to improve (بہتر بنانا) our ways of building houses, our methods of communication (مواصلات) and transportation (نقل و حمل), and even (حتیٰ کہ) the way we spend (گزارتے ہیں) our leisure (فرصت) time.

Better Attitudes: By an attitude (ردیہ) we mean the way we feel toward some idea (خیال) or some event (واقعہ). If a person believes (یقین) in some kind of charm (تعویذ) will prevent (بچاتا) him from having bad luck (بد قسمتی), he will wear the charm, and will feel (محسوس کرتا) uncomfortable (بے چین) without it. Feelings (احساسات) which involve (شامل ہوتا) fears (خوف) such as this are called superstitions (توہمات). Superstitious (توہم پرست) people believe (یقین رکھتے) in signs of good or bad luck, and their lives are greatly influenced (زیادہ اثر) by such (ایسے ہی) signs.

Superstitious (توہماتی) beliefs (عقائد) are being overcome (مغلوب ہو رہے) by using the scientific method to demonstrate (عملی مظاہرہ کرنا) that there is no sound basis for them. Few people (بہت کم لوگ) today believe that diseases are caused by evil spirits (بد روحیں). Though astrology (علم نجوم) and fortune-telling (قسمت کا حال بتانا) are still

کے ساتھ ہی ملتی تھی۔ پھیلیوں اور گھوگھوں کو پکڑنے کے فوراً بعد ہی کھایا جاسکتا تھا۔ آج قطع نظر اس کے کہ لوگ کہاں رہتے ہیں، وہ تازہ پھل، گوشت اور سبزیاں پورا سال حاصل کر سکتے ہیں۔ فوری جمادینے والے طریقہ کار سے، سبزیاں، پھل، سمندری خوراک اور مختلف قسم کے پھل محفوظ کئے جاسکتے ہیں تاکہ وہ غذائیت اور مزیدار رہ سکیں۔ انتخاب، درجہ بندی اور خوراک پر عمل کے جدید طریقوں نے ڈبوں میں بند خوراک کے زہر آلود ہونے کے خطرے کو ختم کر دیا ہے، خشک کرنا یا دودھ، انڈے، آلو، اور سیب جیسی خوراک سے پانی ختم کرنا محفوظ کرنے کا ایک عملی طریقہ کار ثابت ہوا ہے۔

ہماری کھانے کی عادات ہی صرف وہ چیز نہیں جو ہماری زندگی میں سائنس کے استعمال سے بدلی ہے۔ کیونکہ ہم نے سائنس کو عوامل اور اپنے ارد گرد کی اشیاء کے بارے میں مزید جاننے اور ان پر قابو پانے کے طریقہ کار کے متعلق استعمال کیا ہے۔ ہم اپنے مکانات کی تعمیر کے انداز، ہمارے ذرائع ابلاغ اور ذرائع آمدورفت کے طریقہ کار، اور حتیٰ کہ اپنے فارغ وقت گزارنے کے انداز کو بہتر بنانے کے قابل ہو گئے ہیں۔

بہتر رویہ: رویہ سے ہمارا مطلب ہے وہ انداز جس سے ہم کسی خیال یا کسی واقعہ کو محسوس کرتے ہیں۔ اگر ایک شخص مانتا ہے کہ کسی قسم کا تعویذ پہن لینا اسے بُری قسمت سے بچالے گا تو وہ تعویذ پہن لے گا اور اس کے بغیر بے آرامی محسوس کرے گا۔ اس طرح کے احساسات جن میں خوف شامل ہوا نہیں توہمات کہتے ہیں۔ توہم پرست لوگ اچھی یا بُری قسمت کی نشانیوں پر یقین رکھتے ہیں اور ان کی زندگیاں ایسی علامتوں سے بہت زیادہ اثر انداز ہوتی ہیں۔

توہماتی عقائد پر سائنسی طریقہ کار کے استعمال سے قابو پایا گیا ہے یہ ظاہر کر کے کہ ان کی کوئی مضبوط بنیاد نہیں۔ نہ ہونے کے برابر لوگ آج مانتے ہیں کہ بیماریاں بدروحوں کی وجہ سے ہوتی ہیں۔ اگرچہ علم فلکیات اور قسمت کا حال بتانا ابھی تک عمل میں ہے، وہ اتنے زیادہ لوگوں کی

practiced, they do not influence the lives of as many people as they once (کسی زمانے میں) did. It has been learned (علم میں آچکا ہے) that there is always a good natural (طبعی) reason (وجہ) for everything that happens to people. As a result, most people no longer (مزید نہیں) fear (خوف کھاتے) black cats, broken (ٹوٹے ہوئے) mirrors, and the number (نمبر) 13.

By the scientific (سائنسی) method (طریقہ کار) it has been demonstrated (ثابت کیا ہے) that ideas (خیالات) are not necessarily (جانے جاتے) true (سچے) because they have been believed (مزدوری نہیں) (ضروری نہیں) for a long time. Ideas must now be supported (مدد دی) by facts (حقائق) in order to be acceptable (قابل قبول) to the scientist or to people who use the scientific method.

The discoveries (دریافتیں) of scientists have helped (مدد دی ہے) people develop (تیار کرنے) an attitude (رویہ) of open-mindedness (کشادہ دہنی). They are more willing (راضی ہیں) to look for (تلاش کرنا) new truths (سچائیاں) than to assume (فرض کرنا) that what has been considered (سمجھا گیا) true will always (ہمیشہ) be true. Because people have had to change (تبدیل کرنا پڑا) their old ideas as a result of new discoveries made by scientists, they are less likely (کم امکان) to accept (قبول کرنا) conclusions (نتائج) as final (حتمی).

یہ زندگیوں کو متاثر نہیں کرتے جتنا وہ کبھی کیا کرتے تھے۔ یہ پتہ چلا ہے کہ لوگوں کے ساتھ جو کبھی ہوتا ہے اس کے لئے ایک اچھی قدرتی وجہ ہوتی ہے۔ نتیجہ کے طور پر، زیادہ تر لوگ اب مزید کالی بیلیوں، ٹوٹے شیشوں اور 13 نمبر سے نہیں ڈرتے ہیں۔

سائنسی طریقہ کار سے پتہ چلا ہے کہ ضروری نہیں کہ تصورات درست ہوں صرف اسی لئے کہ ایک لمبے عرصے سے ان پر یقین کیا جاتا ہے۔ تصورات کو سائنس دانوں یا لوگوں کے لئے جو سائنسی طریقہ کار استعمال کرتے ہیں کے لئے قابل قبول بنانے کے لئے حقائق کا ساتھ چاہیے۔

سائنس دانوں کی دریافتوں نے لوگوں کو کھلے ذہن کا رویہ اختیار کرنے میں مدد دی ہے۔ وہ نئے سچ کی تلاش کرنا چاہتے ہیں بجائے فرض کرنے کے کہ جسے سچ مانا جاتا تھا وہ ہمیشہ سچ رہے گا۔ چونکہ لوگوں کو سائنس دانوں کی نئی دریافتوں کی وجہ سے اپنے پرانے خیالات بدلنے پڑے اس لئے وہ نتائج کو حتمی ماننے پر کم تیار ہیں۔

## SOLVED EXERCISES OF THE TEXT BOOK

Q 1. How has the scientific method helped us in our fight against disease?

Ans. In olden times life was quite uncertain. Seven out of eight babies died before reaching their first birthday. There were fatal diseases like yellow fever, malaria, typhus, cholera, typhoid fever, scarlet fever, measles and whooping cough. Scientific method has helped us by treating these diseases and helping in their prevention.

Q 2. Write a note on the better sanitary conditions available in our cities today and compare them with what they were like a hundred years ago?

Ans. Sanitary conditions in our larger cities one hundred years ago were undesirable. Streets were narrow, unpaved, and poorly drained. Garbage was thrown in the streets. Animals fed upon that garbage. Outdoor toilets were in abundance.

But today our city streets are paved, well drained and well cleaned. Sewage from all sections of city is carried through sealed pipes. There are separate sanitation departments in almost all the cities. Clean water is supplied to the inhabitants. In short we are living in a sort of paradise.

Q 3. What are the sanitary condition in our villages today and how would you improve them?

Ans. In our villages sanitary conditions are not good. Streets are not paved and well drained. System of sewage is almost non existent. Outdoor toilets are common.

We can improve our sanitary conditions by planning effectively and making the people conscious about their position. Streets must be paved. Garbage must be thrown at specific places.

- Q 4.** How has the scientific method helped us in the production and preservation of food?
- Ans.** Through the use of scientific method we have learned to produce better qualities of food and to preserve them for a longer period. We have learned to preserve foods for a longer period through the use of canning and pickling. Modern methods of selecting, grading and processing foods have removed the risk or danger of poisoning from canned foods.
- Q 5.** We are now less fearful than our ancestors. What were our ancestors afraid of?
- Ans.** Our ancestors were quite superstitious people. They were afraid of good or bad luck and their lives were driven by those signs. They were fearful of evil spirits. Astrology and fortune telling were common among them. They were afraid of black cats, broken mirrors, number 13 and some kind of charms.
- Q 6.** How has the scientific method enabled us to get over the old fears?
- Ans.** By the use of scientific method we have learned that there is always a good natural reason for everything that happens to people. Now, it has been discovered that ideas are not necessarily true because they have been believed for a long time. Ideas must now be supported by facts.
- Q 7.** What part did astrology play in the lives of men and women in the past? Give examples.
- Ans.** Astrology, and fortune-telling were practised abundantly in the olden times. Our ancestors believed in these things of good and bad luck. They believed that black cats, broken mirrors and the number 13 could harm them. They were fearful of such incidents and irrationally thought of them as dangerous.
- Q 8.** Describe some of the superstitions still current in our country. How do they affect the lives of those who believe in them?
- Ans.** Yes, in our country there are a lot of superstitions. People believe in charms, black cats, crow's cackles and many other things. Business of fortune-telling is thriving in all the areas of Pakistan. It has affected the lives of the people in many ways.
- Q 9.** How does scientific method help us?
- Ans.** Scientific method has helped us in almost every field of life. It has helped us in solving problems such as those dealing with the maintenance of health, the production and preservation of foods, the construction of our homes, and in the improvement of the systems of communications and transportation. It has changed our ways of living and thinking. We are now more critical in our thinking.
- Q 10.** What sort of diseases were common hundred years ago?
- Ans.** About one hundred years ago measles, whooping cough, scarlet fever and diphtheria were common. People had to fight with other fatal diseases such as yellow fever, malaria, typhus, cholera, typhoid fever and influenza. These diseases spread like a wild fire and proved disastrous.
- Q 11.** How have our eating habits been changed?
- Ans.** By the use of scientific method our eating habits have been changed. We use pickles, scientifically preserved and graded foods. We can have fruit, meats and vegetables that are quite out of season and grown at far flung areas. We can freeze for a long time and use them.

# EXTENSIVE SHORT QUESTIONS

Q. 1 How has the scientific method benefited us?

Ans. Scientific method has helped us in solving our problems related to our health, preservation of food, construction of our houses and improvement in our daily use things.

Q. 2 How has scientific method changed our ways of thinking?

Ans. Scientific method has changed our ways of thinking completely. It has changed people's attitude and created an awareness in them thus they can better explain strange and mysterious happenings.

Q. 3 How is the spread of diseases prevented these days?

Ans. Today sanitation department works to keep the cities clean and help us in preventing the spread of diseases.

Q. 4 What was the ratio of survival in new born babies up to one year two hundred years ago?

Ans. Two hundred years ago one out of eight babies survived and seven died before they were one year old.

Q. 5 What disease did the child suffer from up to the age of twelve?

Ans. At the age of twelve the child was likely to suffer from measles, whooping cough, scarlet fever and diphtheria.

Q. 6 What were the infectious diseases?

Ans. Yellow fever, malaria, typhus, cholera, typhoid fever and influenza were the infectious diseases.

Q. 7 Was life uncertain in the past?

Ans. Life was very uncertain in the past. People had to face a lot of diseases in their lives. A man who was saved from these diseases was considered to be lucky.

Q. 8 What diseases are spread through unsanitary conditions?

Ans. The unsanitary conditions can cause the spread of diseases like typhoid fever, cholera and dysentery.

Q. 9 How was water brought for household use in the past?

Ans. In the past, water was brought by the bucketful for household use. It had to be carried from long distances that's why it was used very carefully. Often it contained disease-producing germs.

Q. 10 How is water supplied to towns and cities today?

Ans. Today, water is supplied through sealed pipes or aqueducts. Now there is enough water to meet the needs of population.

Q. 11 Why was water used so sparingly in the past?

Ans. Water was used so sparingly because it was brought from wells that were situated at a long distance.

Q. 12 What methods did the people use to preserve their food in the past?

Ans. In the past, people preserved their food by canning, pickling or drying them. Meat was preserved by salting, drying or freezing it.

Q. 13 Was it possible to take sea food to remote areas?

Ans. There was no proper means of transportation. That's why it was not possible to take sea food to remote areas.

Q. 14 What kinds of food people living in far off areas use?

Ans. Now people living in far off places can use all kinds of vegetables, fruits, meat and sea food.



Q. 15 How can we preserve our food today?

Ans. We can preserve our food by quick freeze method.

Q. 16 What are the modern methods of removing the danger of poisoning from canned foods?

Ans. The modern methods of removing the danger of poisoning from canned foods are: selecting, grading and processing.

Q. 17 Which is the practical method of preservation today?

Ans. Today the practical method of preservation of food especially milk, eggs, potatoes and apples is dehydration or removal of water from them.

Q. 18 What does 'attitude' mean?

Ans. Attitude means the way we feel towards some idea or event. It is a way of thinking and behaving.

Q. 19 What do superstitions mean?

Ans. Superstitions mean false and baseless fears. Superstitious people believe in signs of good or bad luck and feel protected by certain conditions or things.

Q. 20 How has the discoveries of scientists helped us?

Ans. The discoveries of scientists has helped us in developing an attitude of open-mindedness.

Q. 21 What have we learnt from the scientific method?

Ans. By scientific method we have learnt that there is a natural reason for everything that happens to people.

### Find out the synonyms of the underlined words.

☆ In each sentence the underlined word can be replaced by one of the following words. Find out the right synonym and write down its serial No. (a), (b), (c) or (d).

- |   |  |
|---|--|
| 1- Today we are more <u>critical</u> (نقاد) than our forefathers.<br>(a) clever (b) superstitious<br>(c) narrow minded (d) analytical                   | 6- Life was more <u>uncertain</u> . (غير یقینی)<br>(a) unpleasant (b) unsure<br>(c) reliable (d) pleasant  |
| 2- Scientific method has helped us in the <u>maintenance</u> (تعمیر) of health.<br>(a) destroying (b) distorting<br>(c) spoiling (d) upholding          | 7- Today we are better able to explain happenings which used to be considered strange and <u>mysterious</u> . (پراسرار)<br>(a) helpful (b) puzzling<br>(c) strenuous (d) luxurious |
| 3- today we are more critical than our <u>forefathers</u> . (آباؤ اجداد)<br>(a) grand fathers (b) parents<br>(c) ancestors (d) brothers                 | 8- People <u>undoubtedly</u> (بلاشبہ) had to face diseases before becoming young.<br>(a) readily (b) certainly<br>(c) happily (d) susceptibly                                      |
| 4- All of us have <u>benefited</u> (فائدہ اٹھاتا) greatly from the use of scientific problem.<br>(a) lost (b) profited<br>(c) suffered (d) been worried | 9- We are also more critical in our thinking than our <u>ancestors</u> . (اسلاف)<br>(a) Forefathers (b) four father<br>(c) heirs (d) followers                                     |
| 5- We can explain every <u>happening</u> . (واقعات)<br>(a) possibility (b) uncertainty<br>(c) society (d) event   | 10- More than thirty years have been added to the <u>expected</u> (متوقع) length of man's life.<br>(a) short (b) uncertain   |

- (c) small (d) probable
- 11- Very likely (امکان) before you were six years old, you would have smallpox.  
 (a) probable (b) rare  
 (c) strange (d) unusual
- 12- Even then your battle (کوشش) for life was not over.  
 (a) enmity (b) survival  
 (c) wish (d) struggle
- 13- In the past a disease usually spread throughout the community (معاشرہ).  
 (a) home (b) society  
 (c) street (d) village
- 14- The use of the scientific method has helped us solve such problems as the causes of disease and its prevention (پہچان).  
 (a) attraction (b) cure  
 (c) medicine (d) avoidance
- 15- Today babies are born in hospitals where there is likelihood (امکان) for their getting a disease.  
 (a) chance (b) surety  
 (c) effort (d) safety
- 16- Young people are treated to protect (پہچان) them against Smallpox diphtheria & typhoid fever.  
 (a) shatter (b) feed  
 (c) pollute (d) save
- 17- Superstitions have no sound (شکوک) basis.  
 (a) solid (b) true  
 (c) false (d) agreeable
- 18- Superstitious beliefs are being overcome (تکڑ) (ت).  
 (a) controlled (b) enjoyed  
 (c) spread (d) accept
- 19- Superstitions (تہذبات) in the past were common.  
 (a) ignorance (b) morality  
 (c) false thinking (d) manners
- 20- Into the narrow, unpaved (پتلی) and poorly drained city streets household garbage and other refuse were thrown.  
 (a) metallised (b) wide  
 (c) clean (d) not metallised
- 21- Into the narrow, unpaved and poorly drained city streets household garbage (کوڑا) and other refuse were thrown.  
 (a) package (b) porch  
 (c) rubbish (d) stock
- 22- Into the narrow, unpaved and poorly drained city streets household garbage and other refuse (ناضیل مادہ) were thrown.  
 (a) waste (b) waist  
 (c) denial (d) rejection
- 23- Household garbage and other refuse (پھیرا) were thrown into the streets.  
 (a) poison (b) medicines  
 (c) flowers (d) waste material
- 24- Scientific method has made the prevention (پہچان) of disease possible.  
 (a) spread (b) advance  
 (c) value (d) avoidance
- 25- Human wastes drained (نکالی آب) into wells from which people obtained drinking  
 (a) poisoned (b) dripped  
 (c) rushed (d) hovered
- 26- Today our city street are paved (پٹی) and well-drained.  
 (a) metallised (b) rough  
 (c) soft (d) narrow
- 27- City streets were full of garbage (کوڑا).  
 (a) waste (b) useful material  
 (c) books (d) vegetables
- 28- Sewage (گنداپانی) from all sections is carried through sealed pipes to disposal plant.  
 (a) water supply (b) used water  
 (c) fresh water (d) rainwater

- 29- Through the use of the scientific method it has been demonstrated (دانش کرتا) Unsanitary conditions cause the spread of disease.  
 (a) concealed (b) shown  
 (c) warned (d) foretold
- 30- We enjoy better sanitary (صفائی سے متعلق) conditions now.  
 (a) dirty (b) hygienic  
 (c) unhygienic (d) filthy
- 31- Today most city governments have department of sanitation. (صفائی)  
 (a) research (b) instruction  
 (c) cleanliness (d) dirt
- 32- Today most city governments (شہری حکومت) have department of sanitation.  
 (a) officers (b) municipalities  
 (c) offices (d) missions
- 33- Water had to be earned a considerable (کافی) distance from the well to the home.  
 (a) little (b) great  
 (c) short (d) long
- 34- In the past water was bought bucketful. (بالٹی بھر)  
 (a) pailful (b) handful  
 (c) healthful (d) mouthful
- 35- Water was used sparingly (احتیاط سے) for bathing and cleaning purposes.  
 (a) usually (b) carelessly  
 (c) often (d) rarely
- 36- Carried through a pipeline, or aqueduct (پینٹ) a thousand million liters of water are delivered to the district daily.  
 (a) pipeline (b) tunnel  
 (c) sewage (d) bucketful
- 37- Science has made a remarkable (اہم) advance in the field of water supply.  
 (a) tiny (b) insignificant  
 (c) normal (d) great
- 38- Thrifty (کفایت شعار) housewives preserved their homegrown vegetables and fruits by canning, pickling, or drying.

- (a) frugal (b) fragile  
 (c) remote (d) old
- 39- Sea foods were generally available along the coast (ساحل)  
 (a) price (b) rate  
 (c) shore (d) market
- 40- Regardless (کے باوجود) of where people live today, they can obtain some fresh fruits, meat and vegetables throughout the year.  
 (a) With no consideration  
 (b) With full consideration  
 (c) With due consideration  
 (d) With undue consideration
- 41- Dehydration (پانی کا ختم ہونا) has proved a practical method of Preservation.  
 (a) Adding water (b) Preservation  
 (c) Quick-freeze method  
 (d) Removal of water
- 42- We can eat variety (اقسام) of food.  
 (a) many kinds (b) fine kind  
 (c) same kind (d) one kind
- 43- Fresh vegetables could be obtained (حاصل) only during the growing season.  
 (a) spread (b) enjoy  
 (c) sold (d) procured
- 44- If a person feels that wearing some kind of charm (تھوڑ) will prevent him from having bad luck, he will the charm.  
 (a) sign of bad luck  
 (b) bad omen  
 (c) sign of good luck  
 (d) beads
- 45- Feeling which involve/cars such as this are called superstitions. (توہمات)  
 (a) views (b) foolish ideas  
 (c) attitudes (d) blessings
- 46- Though astrology (ستاروں کا علم) and fortune-telling are still practiced, they do not influence the lives of as many

- people as they once did.
- (a) Knowledge of Stars  
(b) knowledge  
(c) practice (d) follies
- 47- Ideas supported by facts are acceptable (قابل قبول) now.  
(a) arranged (b) agreed  
(c) disagreed (d) liked
- 48- Science has developed an attitude of open-mindedness (وسیع الفطری) in us.  
(a) love (b) hatred  
(c) deny (d) tolerance
- 49- Now we do not assume (مفروضہ) things to be true.  
(a) deny (b) learn  
(c) read (d) suppose
- 50- Science has bettered our attitude (رویہ).  
(a) health (b) wealth  
(c) manner (d) thinking
- 51- Quick-freeze method keeps food nutritious (غذائیت دار).  
(a) fresh (b) warm  
(c) wholesome (d) frozen
- 52- Modern methods of preservation have removed the risk of poisoning (زہریلا) food.  
(a) contaminating (b) purifying  
(c) drying (d) freezing
- 53- By the scientific method it has been demonstrated (دانش کرتا) that ideas are not necessarily even because they have been believed for a long time.  
(a) refused (b) declined  
(c) shown (d) asked
- 54- People are no more willing (پرجوش) to look for new truths.  
(a) reluctant (b) hesitant  
(c) shaky (d) ready
- 55- People are now less likely (موزوں) to accept conclusions as final.  
(a) probable (b) fearful  
(c) awkward (d) judicious
- 56- People are now less likely to accept conclusions (نتائج) as final.  
(a) research (b) ideas  
(c) results (d) decisions

### ANSWERS KEY:

1.	d	2.	d	3.	c	4.	b	5.	d	6.	b	7.	b	8.	b	9.	a	10.	d
11.	a	12.	d	13.	b	14.	d	15.	a	16.	d	17.	a	18.	a	19.	c	20.	d
21.	c	22.	a	23.	d	24.	d	25.	c	26.	a	27.	a	28.	b	29.	b	30.	b
31.	c	32.	b	33.	d	34.	a	35.	d	36.	a	37.	d	38.	a	39.	c	40.	a
41.	d	42.	a	43.	d	44.	c	45.	b	46.	a	47.	b	48.	d	49.	d	50.	c
51.	c	52.	a	53.	c	54.	d	55.	a	56.	c								