



# Venkateshwar International School

Sector-18, Dwarka, New Delhi-78

SAT

Main (2018-19)

Class X

Time Allowed: 1 hr 30mins

**Total : M.M-80**

**English** \_\_\_\_\_ **Math** \_\_\_\_\_ **Science** \_\_\_\_\_ **Total (80)** \_\_\_\_\_

**Name of student** \_\_\_\_\_

**School Code** \_\_\_\_\_

**Class** \_\_\_\_\_

## Section-A (English)

**M.M-20**

**Questions 1-5 are based on the following passage. Read the passage and answer the questions that follow:**

A psychologist studies normal and abnormal mental states from cognitive, emotional, and social processes and behaviour by observing, interpreting, and recording how individuals relate to one another and to their environments. To become a psychologist, a person often completes a graduate university degree in psychology, but in most jurisdictions, members of other behavioural professions (such as counsellors and psychiatrists) can also evaluate, diagnose, treat, and study mental faculties. Psychologists can be seen as practicing within two general categories of psychology: applied psychology which includes "practitioners" or "professionals", and research-orientated psychology which includes "scientists", or "scholars". The training models endorsed by the American Psychological Association (APA) require that applied psychologists be trained as both researchers and practitioners, and that they possess advanced degrees.

Within the two main categories are many further types of psychologists as reflected by the 56 professional classifications recognized by the APA, including clinical, counselling, and educational psychologists. Such professionals work with persons in a variety of therapeutic contexts. People often think of the discipline as involving only such clinical or counselling psychologists. While counselling and psychotherapy are common activities for psychologists, these applied fields are just two branches in the larger domain of psychology. There are other classifications such as industrial, organizational and community psychologists, whose professionals mainly apply psychological research, theories, and techniques to "real-world" problems of business, industry, social benefit organizations, government, and academia.

### **Clinical psychologists**

Clinical psychologists can offer a range of professional services, including: Providing psychological treatment (psychotherapy), Administering and interpreting psychological assessment and testing, Conducting psychological research, Teaching, Developing prevention programs, Consulting (especially with schools and businesses), Program administration and providing expert testimony (forensics).

In practice, clinical psychologists might work with individuals, couples, families, or groups in a variety of settings, including private practices, hospitals, mental health organizations, schools, businesses, and non-profit agencies. Most clinical psychologists who engage in research and

teaching do so within a college or university setting. Clinical psychologists may also choose to specialize in a particular field.

Although psychiatrists and clinical psychologists share the same fundamental aim—the alleviation of mental distress—their training, outlook, and methodologies are often different. Perhaps the most significant difference is that psychiatrists are licensed physicians, and, as such, psychiatrists are apt to use the medical model to assess mental health problems and to also employ psychotropic medications as a method of addressing mental health problems.

Psychologists generally do not prescribe medication, although in some jurisdictions they do have limited prescription privileges. In three US states (Illinois, Louisiana, and New Mexico), some psychologists with post-doctoral pharmacology training have been granted prescriptive authority for certain mental health disorders upon agreement with the patient's physician.

Clinical psychologists receive extensive training in psychological test administration, scoring, interpretation, and reporting, while psychiatrists are not trained in psychological testing. Such tests help to inform diagnostic decisions and treatment planning.

**Q1. Which is the predominant area that a psychologist studies?**

- a) Abnormal mental state
- b) Abnormal and normal mental states and behaviour
- c) Mental and cognitive abilities
- d) Mental distress

**Q2. What is the common aim of psychiatrists and clinical psychologists?**

- a) Alleviation of mental distress
- b) Study of human mental faculties
- c) Study of attitude
- d) Study of aptitude

**Q3. Which choice best describes the developmental pattern of the passage?**

- a) A careful analysis of the history and definition of psychology
- b) A piece of news about everything related to psychology
- c) A cheerful recounting of an anecdote
- d) A definitive response to a series of problems

**Q4. The word 'testimony' in the passage means:**

- a) Experience
- b) Happiness
- c) Evidence
- d) Fireworks

**Q5. The antonym of 'comfort/prosperity' in the above passage is**

- a) Privilege
- b) Alleviation
- c) Cognitive
- d) Distress

Questions 6-10 are vocabulary based questions:

**Q6. 'Affliction' is most similar in meaning to:**

- a) Disorder                      b) Source of happiness                      c) Malice                      d) Scenario

**Q7. 'Scourge' is most similar in meaning to:**

- a) Stationery                      b) Disorder                      c) Plague                      d) Whip

**Q8. 'Obliteration' is most similar in meaning to:**

- a) Amazement                      b) Annoyance                      c) Wary                      d) Destruction

**Q9. 'Apathetic' is most nearly opposite in meaning to:**

- a) Avid                      b) Half hearted                      c) Dull                      d) Passive

**Q10. 'Voracious' is most nearly opposite of:**

- a) Insatiable                      b) Uncontrollable                      c) Unquenchable                      d) Apathetic

Questions 11-15 have four alternatives for idioms/phrases italicized in the sentence. Choose the alternative which best expresses the meaning of the phrase/idiom.

**Q11. She came up with witty retorts at the drop of a hat.**

- a) After some time  
b) Instantly  
c) Gradually  
d) Eventually

**Q12. Despite trying to woo the girl several times, the boy came back to the drawing board.**

- a) To fix his engagement  
b) To write the wedding vows  
c) To start again after the failed attempts  
d) To draw pictures

**Q13. He was barking up the wrong tree in the court.**

- a) Looking at the wrong records  
b) Filing up the wrong documentation  
c) Pursuing a misguided line of thought  
d) Hiring a wrong judge

**Q14. The kind of negativity that was created, I was so glad to see the back of her.**

- a) To see off a friend  
b) To look at the person leave  
c) To bid somebody a farewell  
d) None of the above

**Q15. Since an important day lay ahead of her, she burnt the midnight oil.**

- a) Burning oil to make camphor  
b) Burnt oil when there's no electricity  
c) To work late through the night  
d) All of the above

**Questions 16-18 have four alternatives out of which three are grammatically incorrect. Identify the correct option.**

- Q16.** a) The boys snuck home late that night. Then waited for the consequences.  
b) The boys snuck home late that night, and then waited for the consequences.  
c) The boys snuck home late at night, then waited for the consequences.  
d) The boys suck home late in night and then waited for the consequences.

- Q17.** a. In case you haven't noticed my real name doesn't appear in the article.  
a) In case you haven't noticed, my real name doesn't appear in the article.  
b) In case you didn't noticed, my real name doesn't appear in the article.  
c) In case you haven't noticed my real name do appear in the article.

- Q18.** a. I don't believe its finally Friday.  
a) I don't believe it's finally Friday.  
b) I didn't believe its finally Friday.  
c) I do believe its Friday.

**Questions 19-20 will have four spellings of the same word. Identify the correct one.**

- Q19.** a) Indite                      b) Indict                      c) Indicte                      d) Inditee

- Q20.** a) Cemetery                      b) Cementary                      c) Cemetary                      d) Cementaary

**SAT**  
**Main Class – X**  
**Section - B (Mathematics)**

Name of the Student : \_\_\_\_\_

Marks Obtained: \_\_\_\_\_

M.M: 30

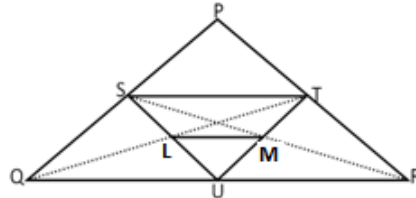
1. When  $n$  is divided by 4, the remainder is 3. What is the remainder when  $2n$  is divided by 4?  
(a) 0 (b) 2 (c) 6 (d) 3
2. There are 4 numbers. The HCF of each pair is 3 and LCM of all the four numbers is 126. The product of 4 numbers is:  
(a) 3400 (b) 3401 (c) 3402 (d) 3403
3. If  $(ab^2)^{1/3} = 125$  where  $a > b > 1$  and  $(a, b^2) \in \mathbb{N}$ , then the correct relation is:  
(a)  $a = b$  (b)  $a = b^4$  (c)  $a^{3/2} = b^{2/3}$  (d)  $a = b^6$
4. If  $xya^2 = (x - y)^2(a + 1)$ , then the value of  $1 + \frac{4}{a} + \frac{4}{a^2}$  is equal to:  
(a)  $\left(\frac{x-y}{x+y}\right)^2$  (b)  $\left(\frac{x+y}{x-y}\right)^2$  (c)  $\left(\frac{x}{x+y}\right)^2$  (d)  $\left(\frac{y}{x+y}\right)^2$
5. The area of region bounded by  $x = 0$ ,  $2x - 3y = -6$  and  $2x + 3y = 18$  is:  
(a) 2 square unit (b) 10 square unit (c) 8 square unit (d) 6 square unit
6. Which one of the following statement is false?  
(a) One of every three consecutive positive integers starting from 1 is divisible by 3.  
(b) One of every three consecutive positive integers starting from 1 is divisible by 5.  
(c) One of every three consecutive positive integers starting from 1 is divisible by 2.  
(d) The product of two consecutive integers may or may not be divisible by 2.
7. If  $\sqrt{x^2 - 9x + 20} - \sqrt{x^2 - 12x + 32} = \sqrt{2x^2 - 25x + 68}$ , then the possible values of  $x$  are:  
(a) 4, 9 (b) 3, 9 (c) 2, 4 (d) 2, 6
8. If  $p$  be the area of a right angled triangle ABC which is right angled at B and the length of one of its two sides containing right angle is  $q$ , then the length of perpendicular on the hypotenuse is:  
(a)  $\frac{pq}{\sqrt{p^2+q^2}}$  (b)  $\frac{2pq}{\sqrt{4p^2+q^4}}$  (c)  $\frac{2pq}{\sqrt{p+q^2}}$  (d)  $\frac{2pq}{\sqrt{p^2+q^2}}$
9. If  $\alpha, \beta$  and  $\gamma$  are the zeroes of the polynomial  $x^3 - px^2 + qx - r$ , then  $\frac{1}{\alpha\beta} + \frac{1}{\beta\gamma} + \frac{1}{\gamma\alpha}$  is:  
(a)  $\frac{p}{r}$  (b)  $\frac{2}{pr}$  (c)  $\frac{q}{r}$  (d) None of these

10.  $p(x)$  is a polynomial of degree more than 2. When  $p(x)$  is divided by  $x - 2$ , it leaves remainder 1 and when it is divided by  $x - 3$  it leaves a remainder 3. The remainder when  $p(x)$  is divided by  $(x - 2)(x - 3)$  is:
- (a) 0 (b)  $2x + 3$  (c) 3 (d)  $2x - 3$
11. If  $\sqrt{x} + \sqrt{x - \sqrt{1 - x}} = 1$ , then value of  $x$  is:
- (a)  $\frac{4}{9}$  (b)  $\frac{16}{25}$  (c)  $\frac{25}{49}$  (d)  $\frac{49}{81}$
12. The HCF of two polynomials is  $(x - 2)(x + 3)$  and their LCM is  $(x - 2)^2(x + 3)(x + 1)$ . If one of the polynomials is  $x^2 - x - 2$ , then the other polynomial is:
- (a)  $(x - 2)^2(x + 3)^2$  (b)  $(x - 2)^2(x - 3)^2$  (c)  $(x + 2)^2(x + 3)^2$  (d) none of these
13. The factors of  $x^4 - 14x^2y^2 - 51y^4$  are:
- (a)  $(x^2 + 17y^2)(x^2 - 3y^2)$  (b)  $(x^2 - 17y^2)(x^2 - 3y^2)$   
(c)  $(x + \sqrt{17}y)(x - \sqrt{17}y)(x^2 - 3y^2)$  (d)  $(x + \sqrt{17}y)(x - \sqrt{17}y)(x^2 + 3y^2)$
14. The perimeter of a right triangle is 60 cm and its hypotenuse is 26 cm, then its other two sides are :
- (a) 9 cm and 25 cm (b) 10 cm and 24 cm  
(c) 15 cm and 8 cm (d) 2 cm and 12 cm
15. Three equal circles of unit radius touch each other. Then, the area of the circle circumscribing these three circles is:
- (a)  $\frac{\pi}{6}(2 + \sqrt{3})^2$  (b)  $\frac{\pi}{3}(2 + \sqrt{3})^2$  (c)  $6\pi(2 + \sqrt{3})^2$  (d)  $3\pi(2 + \sqrt{3})^2$
16. If  $a^{1/3} + b^{1/3} + c^{1/3} = 0$ , then the value of  $(a + b + c)^3$  is:
- (a) 0 (b)  $3abc$  (c)  $abc$  (d)  $27abc$
17. If  $a$  and  $b$  are two positive integers and  $a + b + ab + 1 = 77$ , then the possible value of  $a + b$  is:
- (a) 18 (b) 22 (c) 16 (d) none of these
18. A pharmacist needs to strengthen a 15% alcohol solution to one of 32% alcohol. How much pure alcohol should be added to 400mL of the 15% solution?
- (a) 90mL (b) 30mL (c) 100mL (d) 110mL
19. The sum and the difference of two expressions are  $5x^2 - x - 4$  and  $x^2 + 9x - 10$  respectively. Then their LCM would be equal to:
- (a)  $x - 1$  (b)  $(2x + 3)(3x + 7)$   
(c)  $(2x - 3)(3x + 7)$  (d)  $(x - 1)(2x - 3)(3x + 7)$
20. If  $\sqrt{15 - x\sqrt{14}} = \sqrt{8} - \sqrt{7}$ , then the value of  $x$  is:
- (a) 6 (b) 4 (c) 8 (d) -6

21. Rohit goes from a place to another and returns by the same route. He pedals his way uniformly with speed 'u' while going and with speed 'v' while returning. The average speed of his journey is:

- (a)  $\frac{1}{\frac{1}{2}(\frac{1}{u} + \frac{1}{v})}$       (b)  $\frac{1}{2(\frac{1}{u} - \frac{1}{v})}$       (c)  $\frac{1}{\frac{1}{2}(u-v)}$       (d)  $\frac{u+v}{2}$

22. In the figure given below, S, T and U are the mid points of PQ, PR and QR respectively. If the line joining QT and RS intersect SU and TU at L and M respectively, then:



- (a)  $LM = \frac{1}{16}QR$       (b)  $LM = \frac{1}{8}QR$       (c)  $LM = \frac{1}{2}QR$       (d)  $LM = \frac{1}{4}QR$

23. In a certain language BROUGHT is coded as SGFVAQN, then SUPREME will be coded as:

- (a) DLDSTVQ      (b) DLDSRTO      (c) FNFSRTO      (d) RTOSDLD

24. A two digit number is obtained by either multiplying the sum of digit by 8 and adding 1 or by multiplying the difference of digit by 13 and adding 2. The number is:

- (a) 14      (b) 51      (c) 41      (d) 15

25. The unit's place digit in  $(7^{27} - 3^{14})$  is:

- (a) 7      (b) 4      (c) 3      (d) 0

26. If  $a_1$  and  $a_2$  are the zeroes of the quadratic polynomial  $p(y) = y^2 - y - 2$ , then the polynomial whose zeroes are  $2a_1+1$  and  $2a_2+1$  is:

- (a)  $y^2 - 4y - 5$       (b)  $y^2 + 4y - 5$       (c)  $y^2 + 4y + 5$       (d)  $y^2 - 4y + 5$

27. If  $\sin \theta + \cos \theta = a$  and  $\sec \theta + \operatorname{cosec} \theta = b$ , then the value of  $b(a^2 - 1)$  is equal to:

- (a) 2a      (b) 3b      (c) 0      (d) 2ab

28. A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?

- (a) 26.34 litres      (b) 27.36 litres      (c) 28 litres      (d) 29.16 litres

29. Three circles touch each other externally. The distance between their centre is 5cm, 6cm and 7cm. The radii of the circles is:

- (a) 2cm, 3cm, 4cm      (b) 3cm, 4cm, 1cm      (c) 1cm, 2.5cm, 3.5cm      (d) 1cm, 2cm, 4cm

30. The mean age of 6 persons is increased by 4 years. If one of them whose age is 26 years is replaced by new man, then the age of new man is:

- (a) 50 years      (b) 30 years      (c) 34 years      (d) 52 years

**SAT**  
**Main Class – X**  
**Section - C (Science)**

Name of the Student : \_\_\_\_\_

Marks Obtained : \_\_\_\_\_

**Physics**

**Q1. A small block slides, without friction, down an inclined plane starting from rest. Let  $S_n$  be the distance travelled from time  $t = (n-1)$  to  $t = n$ . then  $\frac{S_n}{S_{n+1}}$  is**

(a)  $\frac{2n-1}{2n}$

(c)  $\frac{2n-1}{2n+1}$

(b)  $\frac{2n+1}{2n-1}$

(d)  $\frac{2n}{2n+1}$

**Q2. A car is moving in a circular horizontal track of radius 10 m with a constant speed of 10m/s. A plumb bob is suspended from the roof of the car by a light rigid rod. The angle made by the rod with the track ( $g = 10 \text{ ms}^{-2}$ ) is**

(a) Zero

(c)  $45^\circ$

(b)  $30^\circ$

(d)  $60^\circ$

**Q3. A light spring balance hangs from the hook of the other spring balance and a block of mass M kg hangs from the former one. Then, the statement about the scale reading is**

(a) both the scale read M kg each.

(b) the scale of lower one reads M kg and the upper one zero.

(c) the reading of the two scales can be anything but the sum of the readings will be M kg.

(d) both the scales read  $\frac{M}{2}$  kg.

**Q4. A spring of force – constant K is cut into two pieces such that one piece is double the length of the other. Then the long piece will have a force – constant of**

(a)  $\frac{2}{3} K$

(c) 3 K

(b)  $\frac{3}{2} K$

(d) 6 K

**Q5. If g is acceleration due to gravity on the surface of earth, the gain in the potential energy of an object of mass m raised from surface of the earth to a height equal to radius R of the earth, is**

(a)  $\frac{1}{2} mgR$

(c) mgR

(b)  $2 mgR$

(d)  $\frac{1}{4} mgR$

**Q6. A source of sound of frequency 600 Hz is placed inside water. The speed of sound in water is 1500 m/s and in air it is 300 m/s. The frequency of sound recorded by an observer, who is standing in air, is**

(a) 200 Hz

(c) 120 Hz

(b) 3000 Hz

(d) 600 Hz



**Q7. Two points P and Q are maintained at the potentials of 10 V and - 4 V respectively.**

**The work done in moving 100 electrons from P to Q is**

- (a)  $- 19 \times 10^{-17}$  J (c)  $- 2.24 \times 10^{-16}$  J  
(b)  $9.60 \times 10^{-17}$  J (d)  $2.24 \times 10^{-16}$  J

**Q8. The potential difference applied to an X – ray tube is 5 KV and the current through it is 3.2 mA. Then the number of electrons striking the target per second is**

- (a)  $2 \times 10^{16}$  (c)  $1 \times 10^{17}$   
(b)  $5 \times 10^{16}$  (d)  $4 \times 10^{15}$

**Q9. The resistance of the series combination of two resistances is S. When they are joined in parallel, the total resistance is P. if  $S = nP$ , then the minimum possible value of n is.**

- (a) 4 (c)  $\frac{8}{9}$   
(b) 3 (d) 2

**Q10. Two wires of the same metal have same length, but their cross – section are in the ratio of 3:1, they are joined in series. The resistance of thicker wire is  $10\Omega$ . The total resistance of combination will be**

- (a)  $\frac{5}{2}\Omega$  (c)  $40\Omega$   
(b)  $\frac{40}{2}\Omega$  (d)  $100\Omega$

**Main  
Class – X**

**Chemistry**

**Q11. Turmeric(Haldi) rapidly becomes colourless on addition of**

- (a) baking soda (b) vinegar  
(c) lemon juice (d) alcohol

**Q12. Arrange the following base in the increasing order of their basic strength.**

- I. Sodium hydroxide  
II. Magnesium hydroxide  
III. Aluminium hydroxide  
IV. Ammonium hydroxide

Select the correct order

- (a) IV<II<I<III (b) IV<I<II<III  
(c) IV<III<II<I (d) I<II<III<IV

**Q13. The radioactive isotope of hydrogen is**

- (a) hydrogen (b) parahydrogen  
(c) deuterium (d) tritium

**Q14. Formation of coal from wood is**

- (a) adsorption (b) carbonization  
(c) decarboxylation (d) none of these

**Q15. Dialysis is used for the purification of**

- (a) suspensions (b) true solutions  
(c) homogeneous mixtures (d) colloidal solution

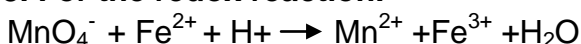
**Q16. By decreasing pressure boiling point of a liquid**

- (a) increases  
(b) decreases  
(c) may increase or decrease depending upon temperature of the liquid  
(d) remains unchanged

**Q17. A pressure cooker works on the principle of**

- (a) elevation of boiling point of water by the application of pressure  
(b) making the food-grains softer by the application of pressure  
(c) making the food grain softer by the application of pressure and temperature  
(d) keeping the food grain inside steam for a longer time

**Q18. For the redox reaction.**



In the balanced equation, correct coefficients are

- |     | $\text{MnO}_4^-$ | $\text{Fe}^{2+}$ | $\text{H}^+$ |
|-----|------------------|------------------|--------------|
| (a) | 1                | 5                | 8            |
| (b) | 16               | 5                | 2            |
| (c) | 5                | 16               | 2            |
| (d) | 2                | 16               | 5            |

**Q19. A soda water bottle has pH**

(a)  $<7$

(b)  $>7$

(c)  $=7$

(d) unpredictable

**Q20. The ratio of weight by which carbon and oxygen combine in a molecule of carbon-mono-oxide is**

(a) 3:4

(b) 3:3

(c) 3:2

(d) 3:1

**Main  
Class – X**

**Biology**

**Q21. Green colour of the bile is derived from**

- a) chlorophyll of various vegetables we consume
- b) fatty acid metabolism
- c) tryptophan metabolism
- d) breakdown products of red pigments of broken RBC.

**Q22. CO<sub>2</sub> is majorly transported as**

- a) dissolved in blood plasma.
- b) carbonic acid.
- c) carbinohaemoglobin.
- d) bicarbonates.

**Q23. Crocodile and penguin are similar to whale and dogfish in which of the following feature?**

- a) Possess a ventral solid nerve cord.
- b) Lay eggs and guard them till they hatch.
- c) Possess bony skeleton.
- d) Have gill slits at some stage.

**Q24. The ratio of WBC to RBC in blood is**

- a) 1:1000
- b) 1000:1
- c) 1:600
- d) 600:1

**Q25. Heartbeat results from the rhythmic contraction and relaxation of the muscles of the heart. Each heartbeat generates one pulse in the arteries.**

**From the above two sentences we can say that :**

- A) Pulse rate per minute indicates the rate of heartbeat.
- B) A higher pulse rate does not mean more flow of blood in arteries.

Which of the following is correct?

- a) Only (a)
- b) Only (b)
- c) Both (a) and (b)
- d) Neither (a) and (b)

**Q26. Which nitrogenous base is present only in RNA?**

- a) Adenine
- b) Thiamine
- c) Thymine
- d) Uracil

**Q27. Diagnostic test for AIDS is-**

- a) Widal Test
- b) Lepamin Test
- c) ELISA test
- d) Biopsy

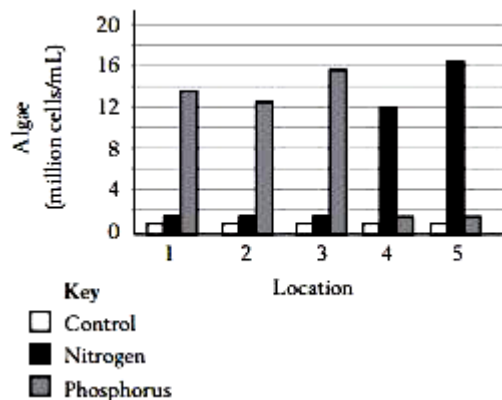
**Q28. A person is undergoing prolonged fasting, his urine will be found to contain abnormal quantities of**

- a) fats
- b) ketones
- c) amino acids
- d) glucose

**Q29. An animal cell placed into a 0.9% saline solution would**

- a) remain unchanged.
- b) swell and burst.
- c) swell and divide.
- d) release solute by exocytosis.

**Q30 Scientists examined the effects of adding nutrients to waters off the Eastern coast of the United States. The graph shows the nutrient added and the resulting algae counts at six locations. No nutrients were added in the control condition.**



At which locations was a sufficient supply of phosphorus present before the experiment was conducted?

- a) 1 only
- b) 1 and 2
- c) 1, 2, and 3
- d) 4 and 5