

# FIITJEE COMMON TEST

BATCHES: NEFY822A01, W822A01-A03, NETHW922A01

## Scholastic Aptitude Test (SAT)

Class: X, Phase-II

Time : 2 Hours

CODE 131706.1

Maximum Marks : 100

### Instructions:

- Caution: Question Paper CODE as given above MUST be correctly marked in the answer OMR sheet before attempting the paper. Wrong CODE or no CODE will give wrong results.**
- Answers have to be marked on the OMR sheet.
- The question paper consists of **100** multiple choice questions (single correct option) divided into five sections.  
Section – I contains **40** questions of **SST**.  
Section – II contains **20** questions of **Mathematics**.  
Section – III contains **13** questions of **Physics**.  
Section – IV contains **13** questions of **Chemistry**.  
Section – V contains **14** questions of **Biology**.
- The Question Paper contains blank spaces for your rough work. No additional sheets will be provided for rough work.
- On the OMR sheet, darken the appropriate bubble with **Blue/Black Ball Point Pen** for each Character of your Enrolment No. and write in ink your Name, Test Centre and other details At the designated places.
- Blank papers, clip boards, log tables, slide rule, calculator, cellular phones, pagers and electronic devices, in any form, are not allowed.
- Write your **Name, Enrolment No. and Test Centre** in the space provided at the bottom of this sheet.
- Each question carries **1 mark** for correct answer. There is **no negative marking**.

Name of the Candidate :   
Enrolment Number :   
Date of Examination :  Centre :

### SECTION – I (SST)

1. Who was Gutenberg?  
(A) A great inventor of France (B) A great inventor of Germany  
(C) A great Russian inventor (D) A great British inventor
2. Name the first printed publication in English which appeared in India?  
(A) Persian law (B) Kesari (C) Bengal Gazette (D) Shamsul Akhber
3. The oldest Japanese book Diamond sutra was printed in :  
(A) AD 666 (B) AD 868 (C) AD 668 (D) AD 866
4. Oliver Twist was written by  
(A) Emile Zolo (B) Thomas Hardy (C) Jane Austin (D) Charles Dickens
5. Who was the author of the novel named 'Pamela'?  
(A) Henry fielding (B) Samuel Richardson (C) Charles Dickens (D) Thomas Hardy
6. The first modern novel in Malayalam  
(A) Swarna lekha (B) Indu Lekha (C) Prem Lekha (D) Sindu Lekha
7. The civil –rights movement in the USA covered the period  
(A) 1954 –1968 (B) 1960 –1980 (C) 1981 – 1987 (D) 2001 – 2007
8. Democracy involves  
(A) Cultural diversity (B) Religious inequalities  
(C) Conflict, Violence and Disintegration (D) Competition among various political parties
9. Major religion of Sri Lanka is  
(A) Buddhism (B) Jainism (C) Hinduism (D) Christianity
10. A women or a man who believes in equal rights and opportunities for man and women :  
(A) Feminist (B) Patriarchy (C) Caste hierarchy (D) Social change
11. Production of a commodity mostly through the natural process is an actively in \_\_\_\_ sector :  
(A) Primary (B) Secondary  
(C) Tertiary (D) Information technology
12. Which of the following act protect the worker's in the organized sector ?  
(A) Factories Act (B) Minimum wages act  
(C) Payment of Gratuity Act (D) All of these
13. Sardar Sarover dam is constructed on  
(A) River Krishna (B) River Mahanadi (C) River Cauvery (D) River Narmada

**Space for rough work**

14. Rooftop rainwater harvesting system in Rajasthan is known as :  
(A) Gullis (B) Tanks (C) Boils (D) Johads
15. Bamboo drip irrigation is common in the state of  
(A) Rajasthan (B) Madhya Pradesh (C) Meghalaya (D) Karnataka
16. Bhoodan – Gramdan Movement was initiated by  
(A) Mahatma Gandhi (B) Jawaharlal Nehru (C) Vinobha Bhave (D) Bal Gangadhar Tilak
17. Rearing of silkworms is called as  
(A) Pisci culture (B) Agri Culture (C) Silvi culture (D) Seri culture
18. In what broad category do the soils of Maharashtra fall ?  
(A) Black soils (B) Alluvial soils (C) Mountains soils (D) Laterite soils
19. Who said these words “There is enough on earth for everybody's need and not for anybody's greed”.  
(A) George Washington (B) Mahatma Gandhi (C) John. F. Kennedy (D) V.D. Savarkar
20. Khadar is type of  
(A) Black soil (B) Alluvial soil (C) Laterite soil (D) Desert soil
21. The first international earth summit was held in  
(A) Geneva (B) New York (C) Japan (D) Rio de Janeiro
22. Pink headed duck is a type of  
(A) Vulnerable special (B) Rare species (C) Endemic Species (D) Extinct species
23. What is the HDI rank of India in the world ?  
(A) 135 (B) 137 (C) 130 (D) 132
24. The number of children that die before the age of one year in 1000 births  
(A) Birth Rate (B) Death Rate (C) Growth Rate (D) Infant Mortality Rate
25. Belgium, 59 percent of the country 's total population who speaks dutch, lives in  
(A) Wallonia region (B) Brussels region (C) Flemish region (D) Tamil region
26. Prior to the power-sharing agreement in Lebanon, the Muslims used to seek unification with  
(A) Syria (B) Israel (C) Palestine (D) Jordan
27. Which of the following countries is ahead of the others in terms of economic development?  
(A) Nepal (B) Bangladesh (C) India (D) Sri Lanka

**Space for rough work**

28. Any exception of a large country was followed federalism  
(A) China (B) U.S.A. (C) Brazil (D) Australia
29. When was the first cotton Mill set up in India ?  
(A) In 1814 (B) In 1834 (C) In 1854 (D) In 1874
30. Guilds were associations of  
(A) Industrialization (B) Exporters (C) Traders (D) Producers
31. What was the name of the paid servant who was appointed by the English company to deal with the Indian weavers ?  
(A) Gomastha (B) Seth (C) Mamlatdar (D) Lambardar
32. Who wrote 95 theses ?  
(A) Martin Luther (B) Johann Gutenberg (C) J.V. Schley (D) Charles dickens
33. World food day is celebrated on  
(A) 20<sup>th</sup> October (B) 19<sup>th</sup> October (C) 2<sup>nd</sup> October (D) 16<sup>th</sup> October
34. Who was known for an art form called ukiyo ?  
(A) Chin ho (B) Kitagawa Utamaro (C) Gutenberg (D) None of the above
35. Which of the following is a leguminous crop ?  
(A) Pulses (B) Nilets (C) Jowar (D) Seasamme
36. Tungabhadra reservoir is cross the river  
(A) Kaveri (B) Krishna (C) Tungabhadra (D) Mahanadi
37. Rain water is referred as  
(A) Palar pani (B) Potable water (C) underground water (D) None of the above
38. What is the rank of India in the world countries in the terms of water availability per person p.a. ?  
(A) 129<sup>th</sup> (B) 130<sup>th</sup> (C) 131<sup>st</sup> (D) 133<sup>rd</sup>
39. Which of the following industry is known as sun rising industry ?  
(A) Dairy industry (B) Information Technology  
(C) Health and clinic (D) Agriculture
40. Which Indian state uses biggest quantity of fertilizer in India ?  
(A) Punjab (B) Karnataka (C) U.P. (D) Maharashtra

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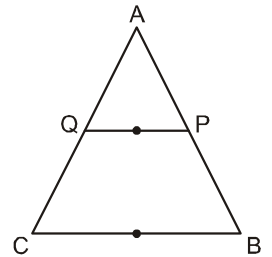
## SECTION – II (MATHEMATICS)

1. The value of  $\tan 48^\circ \tan 23^\circ \tan 42^\circ \tan 67^\circ = ?$   
 (A) 0 (B) 1 (C) -1 (D)  $\infty$

2. The value of  $\frac{3\cos 55^\circ}{7\sin 35^\circ} - \frac{4(\cos 70^\circ \operatorname{cosec} 20^\circ)}{7(\tan 5^\circ \cdot \tan 25^\circ \cdot \tan 45^\circ \cdot \tan 65^\circ \cdot \tan 85^\circ)} = ?$   
 (A)  $\frac{1}{7}$  (B) 7 (C)  $-\frac{1}{7}$  (D) -7

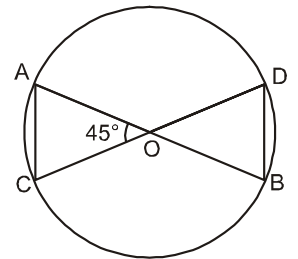
3. If  $\sec \theta = x + \frac{1}{4x}$ , then  $\sec \theta + \tan \theta = ?$   
 (A)  $2x$  (B)  $\sqrt{2}x$  (C)  $2x^2$  (D) None of these

4. From the given figure the  $\frac{\text{area}(\Delta APQ)}{\text{area}(\Delta ABC)}$  if given that  $AP : PB = 1 : 2$ ?  
 (A) 9 : 1 (B) 1 : 9  
 (C) 1 : 4 (D) 3 : 4



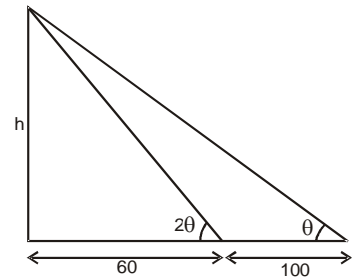
5. If  $\Delta ABC \sim \Delta DEF$  are two similar triangles then  $\frac{\text{ar}(\Delta ABC)}{\text{ar}(\Delta DEF)} = ?$   
 (A)  $\frac{AB^2}{DE^2}$  (B)  $\frac{AC^2}{DF^2}$  (C)  $\frac{BC^2}{EF^2}$  (D) All are true

6. In the figure O is the point of intersection of two chords AB & CD such that  $OB = OD$  then triangles OAC & ODB are :  
 (A) Equilateral but not similar  
 (B) Isosceles but not similar  
 (C) Equilateral and similar  
 (D) Isosceles & similar

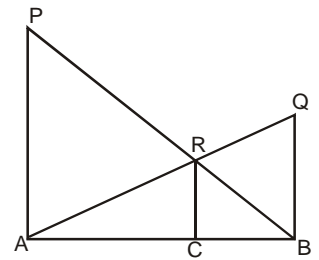


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7. If A, B & C are interior angles of a triangle ABC, then  $\tan\left(\frac{A+B}{2}\right) = ?$   
 (A)  $\sec\frac{C}{2}$  (B)  $\operatorname{cosec}\frac{C}{2}$  (C)  $\tan\frac{5}{2}$  (D)  $\cot\frac{C}{2}$
8. In a triangle ABC & DEF,  $\angle B = \angle E$ ,  $\angle F = \angle C$  &  $AB = 3DE$ . Then, the two triangles are :  
 (A) Congruent but not similar (B) Similar but not congruent  
 (C) Neither congruent not similar (D) Congruent as well similar
9. If in two triangles ABC & PQR,  $\frac{AB}{QR} = \frac{BC}{PR} = \frac{CA}{PQ}$ , then :  
 (A)  $\triangle PQR \sim \triangle CAB$  (B)  $\triangle PQR \sim \triangle ABC$  (C)  $\triangle CBA \sim \triangle PQR$  (D)  $\triangle BCA \sim \triangle PQR$
10. If S is a point on side PQ of a  $\triangle PQR$  such that  $PS = QS = RS$ , then :  
 (A)  $PR \cdot QR = RS^2$  (B)  $QS^2 + RS^2 = QR^2$  (C)  $PR^2 + QR^2 = PQ^2$  (D)  $PS^2 + RS^2 = PR^2$
11. A tower standing on a horizontal plane subtends a certain angle at a point 160 m apart from the foot of the tower. On advancing 100 m towards it, the tower is found to subtend an angle twice as before. The height of the tower is :  
 (A) 80 m (B) 100 m  
 (C) 160 m (D) 200 m



12. In the given figure  $PA = x$ ,  $RC = y$ ,  $QB = z$ , which one is correct ?  
 ( $\angle PAB = \angle QBC = \angle RCB = 90^\circ$ )  
 (A)  $2y = x + z$  (B)  $xy + yz = xz$   
 (C)  $xy + xz = yz$  (D)  $4y = x + z$

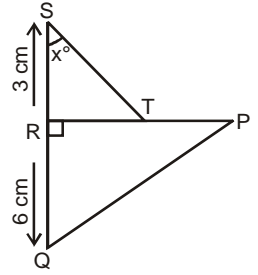


13. From the top and bottom of a tower the angle of elevation of the peak of a mountain are  $\alpha$  and  $\beta$  respectively. If the height of the tower is h feet, then the height of the mountain is :  
 (A)  $\frac{h \tan \alpha}{\tan \beta - \tan \alpha}$  (B)  $\frac{h \operatorname{cat} \alpha}{\operatorname{cat} \beta - \operatorname{cat} \alpha}$  (C)  $\frac{h \tan \beta}{\tan \beta - \tan \alpha}$  (D)  $\frac{h \operatorname{cat} \beta}{\operatorname{cat} \alpha - \operatorname{cat} \beta}$

**Space for rough work**

14. In the diagram, PTR and QRS are straight lines. Given that  $\tan x^\circ = 4/3$  and "T" is the mid point of PR, calculate the length of PQ, in cm :

- (A)  $\sqrt{8}$  (B) 9  
(C)  $\sqrt{59}$  (D) 10

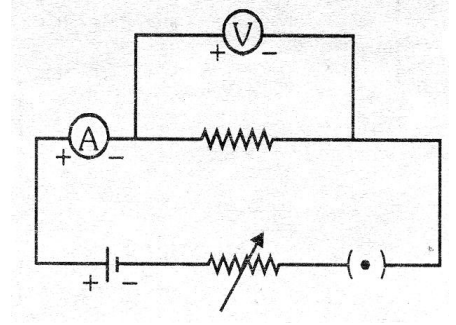


15. After the division of a number successively by 3, 4 and 7, the remainders obtained are 2, 1 and 4 respectively. What will be the remainder if 84 divides the same number?  
(A) 80 (B) 75  
(C) 41 (D) 53
16. If the roots of the equation  $x^3 - ax^2 + bx - c = 0$  are three consecutive integers, then what is the smallest possible value of b?  
(A)  $-\frac{1}{\sqrt{3}}$  (B) -1  
(C) 0 (D) 1
17. The equation  $x + \frac{5}{3-x} = 3 + \frac{5}{3-x}$  has  
(A) no real solution (B) one real solution  
(C) two equal roots (D) infinite roots.
18. If the roots of the equation  $3ax^2 + 2bx + c = 0$  are in the ratio 2 : 3, then  
(A)  $8ac = 25b$  (B)  $8ac = 9b^2$  (C)  $8b^2 = 9ac$  (D)  $8b^2 = 25ac$
19. Find the sum of the series  $1 + (1+2) + (1+2+3) + (1+2+3+4) + \dots + (1+2+3+\dots+20)$   
(A) 1470 (B) 1540 (C) 1610 (D) 1370
20. The ratio of the sum of n terms of two arithmetic progressions is given by  $(2n+3) : (5n-7)$ . Find the ratio of their nth terms  
(A)  $(4n+5) : (10n+2)$  (B)  $(4n+1) : (10n-12)$  (C)  $(4n-1) : (10n+8)$  (D)  $(4n-5) : (10n-2)$

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## SECTION – III (PHYSICS)

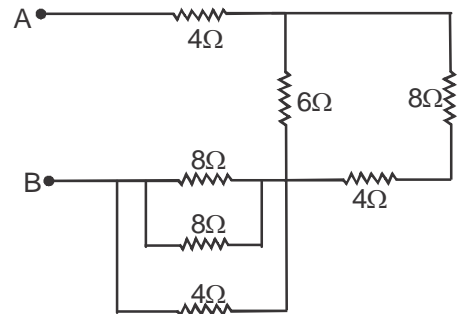
1. The following circuit diagram shown the experimental set up for the study of dependence of current on potential difference. Which two circuit components are connected in series?
- (A) Battery and voltmeter  
 (B) Resistor and voltmeter  
 (C) Ammeter and rheostat  
 (D) Ammeter and voltmeter



2. If a charged body attracts another body, the charge on the other body:-
- (A) must be negative  
 (B) must be positive  
 (C) must be zero  
 (D) may be negative or positive or zero

3. The resistance between points A and B in the circuit shown in the following figure is :

- (A)  $4\Omega$   
 (B)  $6\Omega$   
 (C)  $10\Omega$   
 (D)  $8\Omega$

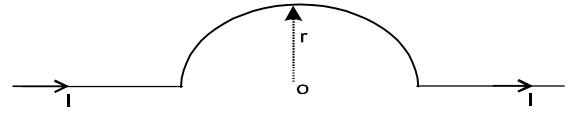


4. To work properly, wind-electric generators need wind speeds of at least about
- (A) 1.5 km/h  
 (B) 15 km/h  
 (C) 150 km/h  
 (D) 1500 km/h
5. The condition for producing biogas is
- (A) air but not water  
 (B) water but not air  
 (C) air and water  
 (D) neither air nor water
6. Which of the following is not an example of a bio-mass energy source?
- (A) Wood  
 (B) gobar-gas  
 (C) nuclear energy  
 (D) coal

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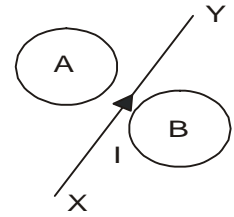


7. A wire as shown in figure carries a current  $I$  ampere. The semicircle has a radius  $r$ . The magnetic field at the centre  $O$  will be :

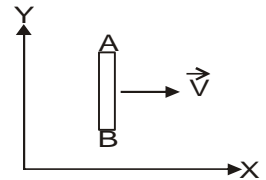


- (A) Zero (B)  $\frac{\mu_0 I}{2r}$  S.I. unit  
 (C)  $\frac{\mu_0 I}{4r}$  (D)  $\frac{\pi I}{r}$  S.I unit
8. A current carrying wire is placed along east - west direction in a magnetic field directed northwards. If the current in the wire is directed eastwards, what will be the direction of force on the wire?  
 (A) Due west (B) Due south (C) Vertically upwards (D) Vertically downwards
9. A helium nucleus makes a full rotation in a circle of radius 0.8 meter in 2 sec. The value of the magnetic field induction  $B$  in tesla at the centre of circle will be :  
 (A)  $2 \times 10^{-19} \mu_0$  (B)  $10^{-19} / \mu_0$  (C)  $10^{-19} \mu_0$  (D)  $2 \times 10^{-20} / \mu_0$ .

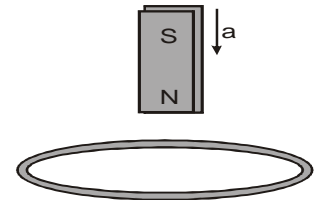
10. Consider the situation shown in figure. If the current  $I$  in the long straight wire  $XY$  is increased at a steady rate then the induced currents in loops  $A$  and  $B$  will be :



- (A) Clockwise in A, anticlockwise in B  
 (B) Anticlockwise in A, clockwise in B  
 (C) Clockwise in both A and B  
 (D) Anticlockwise in both A and B
11. A conducting rod  $AB$  moves parallel to  $X$  - axis in a uniform magnetic field, pointing in the positive  $Z$  - direction. The end  $A$  of the rod gets :  
 (A) Positively charged  
 (B) Negatively charged  
 (C) Neutral  
 (D) First positively charged and then negatively charged



12. A metallic ring is attached with the wall of room. When the north pole of a magnet is brought near to it, the induced current in the ring will be :  
 (A) First clockwise then anticlock wise  
 (B) In clockwise direction  
 (C) In anticlockwise direction  
 (D) First anticlockwise then clockwise



13. To induce an e.m.f. in a coil, the linking magnetic flux :  
 (A) Must decrease (B) Can either increase or decrease  
 (C) Must remain constant (D) Must increase

**Space for rough work**

## SECTION – IV (CHEMISTRY)

1. Zinc blende ore can be converted into zinc oxide by the process of  
(A) Roasting (B) hydrogenation (C) chlorination (D) calcination
2. An ore of manganese metal is:  
(A) bauxite (B) haematite (C) cuprite (D) pyrolusite
3. Which of the following reactants are use to carry out the thermite reaction required for welding the broken railway tracks?  
(A)  $\text{Al}_2\text{O}_3 + \text{Fe}$  (B)  $\text{MnO}_2 + \text{Al}$  (C)  $\text{Fe}_2\text{O}_3 + \text{Al}$  (D)  $\text{Cu}_2\text{O} + \text{Fe}$
4. Which one of the following four metals would be displaced from the solution of its salt by the other three metals?  
(A) Zn (B) Ag (C) Cu (D) Mg
5. A basic oxide will be formed by the element:  
(A) Kr (B) S (C) P (D) Ca
6. The elements whose oxides can turn litmus solution blue are :  
(A) Carbon and sulphur (B) sodium and carbon  
(C) Potassium and magnesium (D) magnesium and sulphur
7. Which of the following can be decomposed by the action of light?  
(A) NaCl (B) KCl (C) AgCl (D) CuCl
8. Wasp stings can be treated with  
(A) Baking soda (B) vinegar (C) washing soda (D) milk of magnesia
9. Which of the following is not a property of mercury ?  
(A) Lustre (B) Malleability (C) Ductility (D) Both (B) and (C)
10. The correct formula for calamine is :  
(A) ZnS (B) ZnO (C) Zn (D)  $\text{ZnCO}_3$
11. Chile salt peter is the ore of  
(A) Magnesium (B) Calcium (C) Sodium (D) Aluminium
12. Solder is an alloy of  
(A) Pb and Sn (B) Cu and Zn (C) Cu and Sn (D) Zn and Sn
13. Oxides of metals are generally  
(A) Acidic (B) Basic (C) Amphoteric (D) Neutralization

**Space for rough work**

## SECTION – V (BIOLOGY)

1. The enzyme rennin converts  
(A) Proteins to proteoses (B) fats to fatty acids  
(C) Casein to paracasein (D) proteins to peptones
2. Largest gland of human body is:  
(A) Gall bladder (B) Liver (C) Pancreas (D) Brain
3. Plant capable of growing in nitrogen deficient soil is:  
(A) Orchids (B) Ferns  
(C) Insectivorous plants (D) Rafflesia
4. Enzyme responsible for CO<sub>2</sub> fixation in photosynthesis is:  
(A) CCK-Pz (B) Amylase (C) Carboxylase (D) Rubisco
5. What will happen if the thyroid is removed from a tadpole?  
(A) The tadpole will grow into a dwarf frog (B) The larva will produce giant frog  
(C) It will continue indefinitely in larval state (D) The larva will die
6. Acromegaly is the result of  
(A) Hypersecretion of GH in children (B) Hypersecretion of GH in adults  
(C) Hypersecretion of GH (D) Deficiency of vitamin D
7. Hormone FSH is meant for  
(A) Release of ova from ovary (B) Relaxing uterus  
(C) Relaxing brain (D) Relaxing fallopian tubes
8. The mineral necessary for nervous conduction is:  
(A) Iron (B) Phosphorus  
(C) Sodium (D) Magnesium
9. Testosterone is produced by  
(A) Sertoli cells (B) Testes cells  
(C) Oxyntic cells (D) Pituitary gland
10. Enteroendocrine glands are present in  
(A) Stomach (B) Intestine (C) Esophagus (D) Both A and B

**Space for rough work**

11. The spinal nerves are:  
(A) Motor nerves (B) Sensory nerves  
(C) Mixed nerves (D) Thoracic nerves
12. Which of the following animals has a false nervous system but not brain?  
(A) Hydra (B) Amoeba  
(C) Cockroach (D) Earthworm
13. Contraction of uterus is brought about by :  
(A) Oxytocin (B) Prolactin  
(C) LH (D) FSH
14. Nissl's granules found in neuron are:  
(A) Made up of DNA (B) Made up of ribosomes & ER  
(C) Helps in formation of neurofibril (D) Mass of mitochondria

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