



# Aakash

Medical | IIT-JEE | Foundations

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MM : 240

PracticeTest-2024-25CF+OYM(P1)-PT04B

Time : 60 Min.

PHYSICS

- |        |         |
|--------|---------|
| 1. (3) | 9. (1)  |
| 2. (2) | 10. (1) |
| 3. (2) | 11. (3) |
| 4. (3) | 12. (4) |
| 5. (2) | 13. (2) |
| 6. (4) | 14. (1) |
| 7. (2) | 15. (2) |
| 8. (2) |         |

CHEMISTRY

- |         |         |
|---------|---------|
| 16. (2) | 24. (4) |
| 17. (4) | 25. (2) |
| 18. (2) | 26. (2) |
| 19. (3) | 27. (1) |
| 20. (2) | 28. (2) |
| 21. (4) | 29. (3) |
| 22. (3) | 30. (2) |
| 23. (1) |         |

BOTANY

- |         |         |
|---------|---------|
| 31. (1) | 39. (2) |
| 32. (1) | 40. (1) |
| 33. (3) | 41. (2) |
| 34. (1) | 42. (1) |
| 35. (4) | 43. (1) |
| 36. (3) | 44. (2) |
| 37. (4) | 45. (1) |
| 38. (2) |         |

ZOOLOGY

- |         |         |
|---------|---------|
| 46. (4) | 54. (2) |
| 47. (4) | 55. (1) |
| 48. (1) | 56. (2) |
| 49. (3) | 57. (2) |
| 50. (1) | 58. (4) |
| 51. (2) | 59. (4) |
| 52. (4) | 60. (3) |
| 53. (3) |         |

  
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## Hints and Solutions

## PHYSICS

(1) Answer : (3)

**Solution:**

A current carrying loop in uniform magnetic field experiences torque.

(2) Answer : (2)

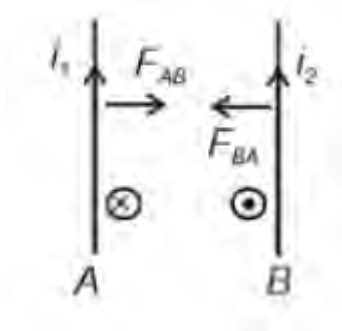
**Solution:**

Speed of proton will not change therefore kinetic energy will be same

(3) Answer : (2)

**Solution:**1 Gauss =  $10^{-4}$  T

(4) Answer : (3)

**Solution:**

(5) Answer : (2)

**Solution:** $F = qvB\sin\theta$  $F_{\max}$  at  $\theta = 90^\circ$ 

(6) Answer : (4)

**Solution:**

$$\vec{F} = q(\vec{V} \times \vec{B})$$

$$\vec{F} = qV B \sin\theta$$

$$\theta = 180^\circ$$

$$\vec{F} = 0$$

(7) Answer : (2)

**Hint:**

Net magnetic field at centre 'O' is

$$\vec{B}_{\text{net}} = \vec{B}_1 + \vec{B}_2$$

**Solution:**

$$\text{Here } \vec{B}_1 = -\vec{B}_2$$

$$\text{So } \vec{B}_{\text{net}} = \vec{B}_1 + \vec{B}_2$$

$$= B_1 - B_2$$

$$= \text{zero}$$

(8) Answer : (2)

**Solution:**

$$B = \frac{\mu_0 i (\pi)}{4\pi r}$$

$$B = \frac{\mu_0 i}{4r}$$

(9) Answer : (1)

**Solution:**

According to Biot-Savart law

$$d\vec{B} = \frac{\mu_0 I}{4\pi} \frac{d\vec{l} \times \vec{r}}{r^3}$$

(10) Answer : (1)

Solution:

$$\oint \vec{B} \cdot d\vec{A} = 0$$

(Gauss's law in magnetism)

(11) Answer : (3)

Solution:

$$\oint \vec{B} \cdot d\vec{l} = \mu_0 \Sigma I$$

enclosed

(12) Answer : (4)

Solution:

The current sensitivity of galvanometer is given as

$$\left(\frac{\theta}{I}\right) = \frac{NBA}{K}$$

$$= \frac{2N \times B \times \frac{A}{2}}{K} = \left(\frac{NBA}{K}\right)$$

It will be remains same.

(13) Answer : (2)

Solution:

Straight wire will experience force only and circular wire will experience torque only so, overall conductor will experience both torque as well as force.

(14) Answer : (1)

Solution:

$$B = 0 \quad r < R$$

$$B = \frac{\mu_0 i}{2\pi r} \quad r > R$$

(15) Answer : (2)

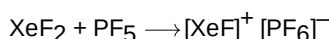
Solution:

$$\frac{E}{B} = v = [M^0 L T^{-1}]$$

CHEMISTRY

(16) Answer : (2)

Solution:



(17) Answer : (4)

Solution:

In Haber's process, iron is used as a catalyst with molybdenum as a promoter.

(18) Answer : (2)

Solution:

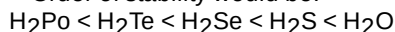
PH<sub>3</sub> gas is used in smoke screens

(19) Answer : (3)

Solution:

On going down the group thermal stability order for H<sub>2</sub>E decreases because H–E bond energy decreases

∴ Order of stability would be:-



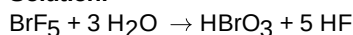
(20) Answer : (2)

Solution:

The compound formed as brown ring in brown ring test is  $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}]^{2+}$

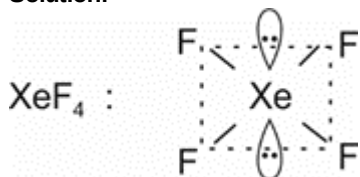
(21) Answer : (4)

Solution:



(22) Answer : (3)

Solution:



(23) Answer : (1)

Solution:

White phosphorus is most reactive allotropic form of phosphorus.

(24) Answer : (4)

Solution:

- (a) Sodium azide or Barium azide : Pure nitrogen  
 (b) Haber process : Ammonia  
 (c) Contact process : Sulphuric acid  
 (d) Deacon's process : Chlorine

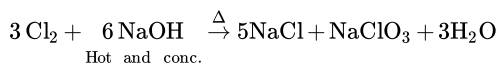
(25) Answer : (2)

Solution:

Ne has highest electron gain enthalpy

(26) Answer : (2)

Solution:



(27) Answer : (1)

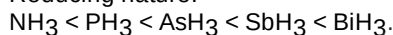
Solution:

Order of melting point :  $\text{H}_2\text{O} > \text{H}_2\text{Te} > \text{H}_2\text{Se} > \text{H}_2\text{S}$ 

(28) Answer : (2)

Solution:

Reducing nature:



(29) Answer : (3)

Solution:

In white phosphorous bond angle is  $60^\circ$ 

(30) Answer : (2)

Solution:

 $\text{F}_2$  is higher SRP hence it is better oxidising agent.

BOTANY

(31) Answer : (1)

Solution:

 $\alpha$ -Thalassemia is controlled by two closely linked genes HBA1 and HBA2 on 16<sup>th</sup> chromosome.

(32) Answer : (1)

Solution:

X-linked recessive disorders - colour blindness and haemophilia.

(33) Answer : (3)

Solution:

Linkage of genes in *Drosophila* was discovered by Morgan.

(34) Answer : (1)

Solution:

Heights in humans is controlled by more than one gene.

(35) Answer : (4)

Solution:



Represents sex unspecified.

(36) Answer : (3)

**Solution:**

Birds show female heterogamety ZZ- ZW type

(37) Answer : (4)

**Solution:**

Morgan found 37.2% of recombinant types in  $F_2$  generation in *Drosophila*. when he made across between white eye and miniature winged female with red eyed normal winged male.

(38) Answer : (2)

**Solution:**

Point mutation arise due to change in a single base pair of DNA.

(39) Answer : (2)

**Solution:**

In each pregnancy, there is always 50 percent probability of either a male or a female child.

(40) Answer : (1)

**Solution:**

Henking discovered X-body but could not explain its significance.

(41) Answer : (2)

**Solution:**

Thalassemias are group of disorder caused by defects in synthesis of globin polypeptide ( $\alpha$  &  $\beta$  chain) in RBC.

(42) Answer : (1)

**Solution:**

Walter Sutton and Theodore Boveri noted that the behaviour of chromosomes was parallel to the behaviour of genes.

(43) Answer : (1)

**Solution:**

The genotype with all the dominant alleles (AABBCC) will have the darkest skin colour.

(44) Answer : (2)

**Solution:**

In Turner's syndrome females are sterile as ovaries are rudimentary besides this, there is lack of other secondary sexual characters as well.

(45) Answer : (1)

**Solution:**

Down's syndrome develops due to trisomy of chromosome number 21.

ZOOLOGY

(46) Answer : (4)

**Solution:**

Infections or diseases which are transmitted through sexual intercourse are collectively called sexually transmitted infections (STIs) or venereal diseases (VD) or reproductive tract infections (RTIs).

*E.g.*, Gonorrhoea, syphilis, genital herpes, chlamydia, genital warts, trichomoniasis, hepatitis-B, etc.

(47) Answer : (4)

**Hint:**

Contraceptives which are placed in uterus.

**Solution:**

IUT, GIFT and ZIFT are assisted reproductive technologies but IUDs are used to prevent pregnancy so they are birth control methods *e.g.*, CuT, Multiload 375, LNG-20, progestasert, etc.

(48) Answer : (1)

**Hint:**

Zygote upto 8 blastomeres is transferred in a woman's fallopian tube.

**Solution:**

If an embryo has more than 8 blastomeres it is transferred to the uterus by a process known as intrauterine transfer (IUT).

(49) Answer : (3)

**Hint:**

ZIFT stands for zygote intrafallopian transfer.

**Solution:**

In ZIFT, the zygote or early embryo with upto 8 blastomeres is transferred into the fallopian tube of the woman.

- (50) **Answer :** (1)  
**Solution:**  
MTPs are relatively safe during the first trimester *i.e.*, upto 12<sup>th</sup> week of pregnancy.
- (51) **Answer :** (2)  
**Solution:**  
Genital warts is completely curable if detected early and treated properly.
- (52) **Answer :** (4)  
**Solution:**  
Use of MTP to get rid of a female foetus is totally against what is legal.
- (53) **Answer :** (3)  
**Solution:**  
In ZIFT, embryo with upto 8 blastomeres is transferred into fallopian tube.
- (54) **Answer :** (2)  
**Solution:**  
Hepatitis-B and HIV can be transmitted by blood transfusion and sharing of needles of infected person.
- (55) **Answer :** (1)  
**Solution:**  
Artificial insemination - Semen is introduced into the vagina or uterus.
- (56) **Answer :** (2)  
**Solution:**  
In GIFT, AI and IUI fertilisation takes place *in-vivo*.
- (57) **Answer :** (2)  
**Solution:**  
Inability to conceive even after two years of unprotected sexual intercourse is called infertility.
- (58) **Answer :** (4)  
**Solution:**  
The complications associated to untreated STIs include PID, abortions, still births, ectopic pregnancies, infertility or even cancer of the reproductive tract.
- (59) **Answer :** (4)  
**Solution:**  
  - Venereal diseases or sexually transmitted diseases or infections are transmitted by sharing of infected needles, surgical instruments with infected person, transfusion of contaminated blood or from an infected mother to foetus.
  - Venereal diseases are not transmitted through kissing or inheritance.
- (60) **Answer :** (3)  
**Solution:**  
Cancer is the noninfectious disease which cannot be transmitted from sexual intercourse.