

MM : 160

Class-XII NEET

TIME : 60 MINUTES

NOTE: There are three sections, Physics, Chemistry and Biology. Physics and Chemistry sections carry 10 questions only and Biology Section carries 20 questions. Each question carries 4 marks and all are compulsory.

**PHYSICS**

01. Given below are two statements:

**Statement I:** An AC circuit undergoes electrical resonance if it contains either a capacitor or an inductor.

**Statement II:** An AC circuit containing a pure capacitor or a pure inductor consumes high power due to its non-zero power factor. In the light of above statements, choose the correct answer from the options given below:

- (1) Statement I is false but statement II is true
- (2) Statement I is true but statement II is false
- (3) Both Statement I and Statement II are false
- (4) Both Statement I and Statement II are true

02. The distance between two plates of a capacitor is  $d$  and its capacitance is  $C_1$ , when air is the medium between the plates. If a metal sheet of thickness  $2d/3$  and of the same area as plate is introduced between the plates, the capacitance of the capacitor becomes  $C_2$ . The ratio  $C_2 / C_1$  is

- (1) 3:1
- (2) 2:1
- (3) 4:1
- (4) 1:1

03. In a metallic conductor, under the effect of applied electric field, the free electrons of the conductor

- (1) Drift from higher potential to lower potential
- (2) Move with the uniform velocity throughout from lower potential to higher potential
- (3) Move in the straight line paths in the same direction
- (4) Move in the curved paths from lower potential to higher potential

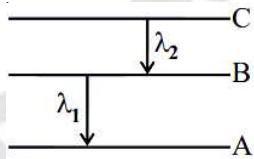
04. The source of time varying magnetic field may be

- (A) a permanent magnet
- (B) an electric field changing linearly with time
- (C) direct current
- (D) a decelerating charge particle
- (E) an antenna fed with a digital signal

Choose the correct answer from the options given below.

- (1) (C) and (E) only
- (2) (D) only
- (3) (A) only
- (4) (B) and (D) only

05. A proton with a kinetic energy  $2\text{eV}$  moves into a region of uniform magnetic field of magnitude  $\pi/2 \times 10^{-2}\text{ T}$ . The angle between the direction of magnetic field and velocity of proton is  $60^\circ$ . The pitch of the helical path taken by the proton is...(Take, mass of proton =  $1.6 \times 10^{-27}\text{ kg}$  and charge on proton =  $1.6 \times 10^{-19}\text{ C}$ )S  
K  
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E**ROUGH WORK**

- (1) 20 cm                      (2) 50 cm  
(3) 40 cm                      (4) 100 cm
06. In a reflecting telescope, a secondary mirror is used to:
- (1) reduce the problem of mechanical support  
(2) make chromatic aberration zero  
(3) move the eyepiece outside the telescopic tube  
(4) remove spherical aberration
07. Two convex lenses of focal length 20cm each are placed coaxially with a separation of 60cm between them. The image of the distant object formed by the combination is at \_\_\_\_\_ from the first lens.
- (1) 80cm                      (2) 100cm  
(3) 50cm                      (4) 40cm
08. A single slit of width 'a' is illuminated by a monochromatic light of wavelength 600 nm. The value of 'a' for which first minimum appears at  $\theta = 30^\circ$  on the screen will be :
- (1)  $0.6 \mu\text{m}$                       (2)  $1.2 \mu\text{m}$   
(3)  $1.8 \mu\text{m}$                       (4)  $3 \mu\text{m}$
09. Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R
- Assertion A:** EM waves used for optical communication have longer wavelengths than that of microwave, employed in Radar technology.
- Reason R:** Infrared EM waves are more energetic than microwaves, (used in Radar)
- In the light of given statements, choose the correct answer from the options given below.
- (1) Both A and R are true but R is NOT the correct explanation of A  
(2) A is false but R is true  
(3) A is true but R is false  
(4) Both A and R are true and R is the correct explanation of A
10. As per given figure A, B and C are the first, second and third excited energy levels of hydrogen atom respectively. If the ratio of the two wavelengths  $\left( i.e. \frac{\lambda_1}{\lambda_2} \right)$  is  $7/4n$ , then value of n will be
- 
- (1) 3                      (2) 4  
(3) 5                      (4) 6

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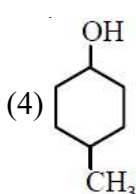
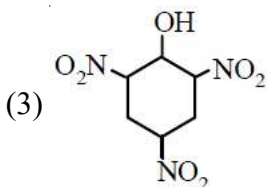
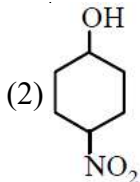
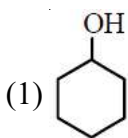
**CHEMISTRY**

11. 0.5 molal aqueous solution of a weak acid (HX) is 20% ionised. If  $K_f$  for water is  $1.86 \text{ K kg mol}^{-1}$ , the lowering in freezing point of the solution is:
- (1) 0.56 K                      (2) 1.12 K  
(3) -0.56 K                      (4) -1.12 K
12. The compound  $\text{C}_7\text{H}_8$  undergoes the following reactions:
- $$\text{C}_7\text{H}_8 \xrightarrow{3\text{Cl}_2/\Delta} \text{A} \xrightarrow{\text{Br}_2/\text{Fe}} \text{B} \xrightarrow{\text{Zn}/\text{HCl}} \text{C}$$
- Find the compound C
- (1) m-bromotoluene  
(2) o-bromotoluene

**ROUGH WORK**

- (3) 3-bromo-2, 4, 6-trichlorotoluene  
 (4) p-bromotoluene

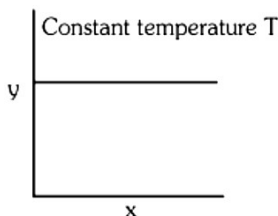
13. Which one is the most acidic compound?



14. The molar conductances ( $\Lambda_m^\circ$ ) at infinite dilution of NaCl, HCl and  $\text{CH}_3\text{COONa}$  are 126.4, 425.9 and  $91.0 \text{ S cm}^2 \text{ mol}^{-1}$  respectively. ( $\Lambda_m^\circ$ ) for  $\text{CH}_3\text{COOH}$  will be:

- (1)  $425.45 \text{ S cm}^2 \text{ mol}^{-1}$  (2)  $180.5 \text{ S cm}^2 \text{ mol}^{-1}$   
 (3)  $290.8 \text{ S cm}^2 \text{ mol}^{-1}$  (4)  $390.5 \text{ S cm}^2 \text{ mol}^{-1}$

15. The given graph is a representation of kinetics of a reaction.



The y and x axes for zero and first order reactions, respectively are

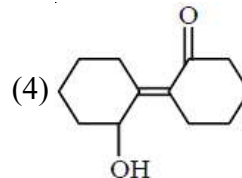
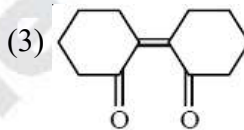
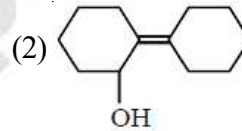
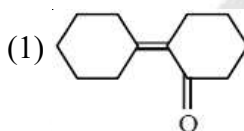
- (1) zero order ( $y = \text{concentration}$  and  $x = \text{time}$ ),  
 first order ( $y = t_{1/2}$  and  $x = \text{concentration}$ )  
 (2) zero order ( $y = \text{concentration}$  and  $x = \text{time}$ ),  
 first order ( $y = \text{rate constant}$  and  $x = \text{concentration}$ )

- (3) zero order ( $y = \text{rate}$  and  $x = \text{concentration}$ ),  
 first order ( $y = t_{1/2}$  and  $x = \text{concentration}$ )  
 (4) zero order ( $y = \text{rate}$  and  $x = \text{concentration}$ ),  
 first order ( $y = \text{rate}$  and  $x = t_{1/2}$ )

16. When neutral or faintly alkaline  $\text{KMnO}_4$  is treated with potassium iodide, iodide ion is converted into 'X'. 'X' is:

- (1)  $\text{I}_2$  (2)  $\text{IO}_4^-$   
 (3)  $\text{IO}_3^-$  (4)  $\text{IO}^-$

17. Of the following, which is the product formed when cyclohexanone undergoes aldol condensation followed by heating?

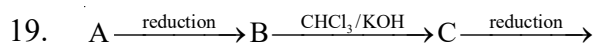


18. Match List-I with List-II.

- | List-I                                       | List-II       |
|--|---------------|
| (a) $[\text{Fe}(\text{CN})_6]^{3-}$          | (i) 5.92 BM   |
| (b) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ | (ii) 0 BM     |
| (c) $[\text{Fe}(\text{CN})_6]^{4-}$          | (iii) 4.90 BM |
| (d) $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ | (iv) 1.73 BM  |

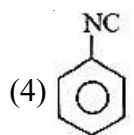
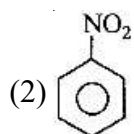
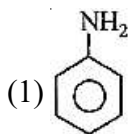
Choose the correct answer from the options given below.

- (1) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)  
 (2) (a)-(iv), (b)-(ii), (c)-(i), (d)-(iii)  
 (3) (a)-(ii), (b)-(iv), (c)-(iii), (d)-(i)  
 (4) (a)-(i), (b)-(iii), (c)-(iv), (d)-(ii)



N-methylaniline,

The compound A is



20. Sucrose on hydrolysis gives
- (1)  $\beta$ -D-Glucose +  $\alpha$ -D-Fructose
  - (2)  $\alpha$ -D-Glucose +  $\beta$ -D-Glucose
  - (3)  $\alpha$ -D-Glucose +  $\beta$ -D-Fructose
  - (4)  $\alpha$ -D-Fructose +  $\beta$ -D-Fructose

## BIOLOGY

21. Interaction of sea anemone and clown fish is:
- (1) Commensalism
  - (2) Mutualism
  - (3) Competition
  - (4) Parasitism
22. Competition for food, light and space is most severe between two:
- (1) Closely related species growing in the same area
  - (2) Closely related species growing in different habitats
  - (3) Distantly related species growing in different habitats
  - (4) Distantly related species growing in the same area
23. Select correct match for interaction among organisms:

- |                  |   |   |
|------------------|---|---|
| (1) Mutualism    | + | 0 |
| (2) Competition  | + | + |
| (3) Predation    | + | - |
| (4) Commensalism | + | + |

24. Identify the possible link "A" in the following food chain:

**Plant** → **Insect** → **Frog** → "A" → **Eagle**

- |            |            |
|------------|------------|
| (1) Rabbit | (2) Wolf   |
| (3) Cobra  | (4) Parrot |

25. Which pyramid is always upright?

- (1) Pyramid of biomass
- (2) Pyramid of energy
- (3) Pyramid of number
- (4) All of these

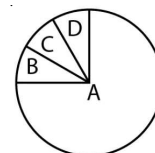
26. Which of the following is correct for a food chain?

- (1) Grass-Grasshopper-Frog-Snake-Hawk
- (2) Grasshopper-Grass-Snake-Frog-Hawk
- (3) Hawk-Grasshopper-Grass-Frog-Snake
- (4) Frog-Snake-Hawk-Grasshopper-Grass

27. Which of the following forests is known as the 'lungs of the planet Earth'?

- (1) Tiaga forest
- (2) Tundra forest
- (3) Amazon rain forest
- (4) Rain forests of North East India

28. Given below is the representation of the extent of global diversity of invertebrates. What groups the four portions (A-D) represent, respectively?



**ROUGH WORK**

	A	B	C	D
(1)	Molluscs	Other animal groups	Crustaceans	insects
(2)	insects	Molluscs	Crustaceans	Other animal groups
(3)	insects	Crustaceans	Other animal groups	Molluscs
(4)	Crustaceans	insects	Molluscs	Other animal groups

29. In which of the following both pairs have correct combination?

- (1) In situ conservation: Tissue culture; Ex situ conservation: Sacred groves  
 (2) In situ conservation: National Park; Ex situ conservation: Botanical Garden  
 (3) In situ conservation: Cryopreservation; Ex situ conservation: Wild life Sanctuary  
 (4) In situ conservation: Seed Bank; Ex situ conservation: National Park

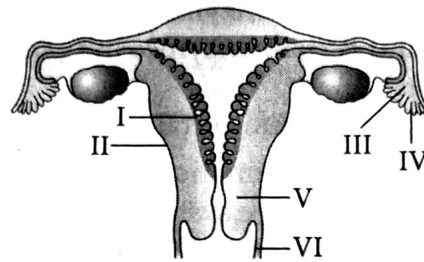
30. Match the column and select correct option for animal and area of there location:

- | Column I              | Column II         |
|-----------------------|-------------------|
| (Animals)             | (Country)         |
| (A) Dodo              | (i) Africa        |
| (B) Quagga            | (ii) Russia       |
| (C) Thylacine         | (iii) Mauritius   |
| (D) Steller's sea cow | (iv) Australia    |
| (E) Passenger pigeon  | (v) North America |
- (1) (A)-(iii); (B)-(ii); (C)-(iv); (D)-(i); (E)-(v)  
 (2) (A)-(ii); (B)-(i); (C)-(iv); (D)-(v); (E)-(iii)  
 (3) (A)-(i); (B)-(iv); (C)-(iii); (D)-(ii); (E)-(v)  
 (4) (A)-(iii); (B)-(i); (C)-(iv); (D)-(ii); (E)-(v)

31. Male hormone is produced in the testis by cells of

- (1) Sertoli (2) Epithelial  
 (3) Spermatoocytes (4) Leydig.

32. The figure given below depicts a diagrammatic sectional view of the human female reproductive system. Which set of three parts out of I-VI have been correctly identified?



- (1) (II) Endometrium, (III) Infundibulum, (IV) Fimbriae  
 (2) (III) Infundibulum, (IV) Fimbriae, (V) Cervix  
 (3) (IV) Oviducal funnel, (V) Uterus, (VI) Cervix  
 (d) (1) Perimetrium, (II) Myometrium, (III) Fallopian tube

33. Which one of the following is an example of hormone releasing IUD?

- (1) Multiload 375 (2) CuT  
 (3) LNG-20 (4) Cu 7

34. The infectious stage of Plasmodium that enters the human body is

- (1) Trophozoites  
 (2) Sporozoites  
 (3) Female gametocytes  
 (4) Male gametocytes

35. Flippers of penguins and dolphins are examples of

- (1) adaptive radiation  
 (2) convergent evolution  
 (3) industrial melanism  
 (4) natural selection.

36. The guts of cow and buffalo possess  
(1) Methanogens           (2) Cyanobacteria  
(3) Fucus sp.               (4) Chlorella sp.
37. The DNA fragments separated on an agarose gel can be visualised after staining with  
(1) acetocarmine  
(2) aniline blue  
(3) ethidium bromide  
(4) bromophenol blue.
38. Which of the following is a restriction endonuclease?  
(1) DNase I               (2) RNase  
(3) Hind II               (4) Protease
39. What triggers activation of protoxin to active toxin of *Bacillus thuringiensis* in bollworm?  
(1) Acidic pH of stomach  
(2) Body temperature  
(3) Moist surface of midgut  
(4) Alkaline pH of gut
40. In RNAi, the genes are silenced using  
(1) ds-RNA               (2) ss-DNA  
(3) ss-RNA               (4) ds-DNA.

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**ROUGH WORK**