



RGP – RANKERS GENIUS PROGRAM

(Phase - 02)

(Physics, Chemistry and Biology)

Set

B

Time: 1 Hour

Moving to Target (NEET)

Marks: 120

1. General Instructions:

(Paper Code: 1304)

- * This test paper consists of 60 question in 3 section (A, B, C)

Marking Scheme:

- Full marks: + 2 if answered correctly.
- Zero marks: 0 if not attempted or incorrect.

2. RGP College Grant Criteria:

- ✓ Students must score a minimum of 70% positive marks in RGP.
- ✓ Student must get under AIR 5,000 in JEE/NEET Examination.

3. Cash Reward Criteria:

- ✓ Exciting Cash Rewards for RGP Toppers.

SENIOR WING (Student's Moving to Class XI th , XII th , Dropper JEE /NEET)		JUNIOR WING (Student's Moving to Class IX th & X th)	
Overall 1 st Topper	₹ 21,000/-	Overall 1 st Topper	₹ 5,100/-
Overall 2 nd Topper	₹ 11,000/-	Overall 2 nd Topper	₹ 3,100/-
Overall 3 rd Topper	₹ 5,100/-	Overall 3 rd Topper	₹ 2,100/-
Overall 4 th – 8 th Topper	₹ 2,100/-	Overall 4 th – 8 th Topper	₹ 1,100/-
Overall 9 th – 15 th Topper	₹ 1,100/-	Overall 9 th – 15 th Topper	₹ 500/-

- ✓ Candidate who got 1st Rank in junior or senior wing in RGP (Phase – 01) will not be eligible for any cash Reward in RGP (Phase – 02).

**** Rankings from 1 to 20 are determined based on the specific criteria outlined in the FAQ section of our website, www.myrankers.com.**

4. Scholarship Criteria in Rankers Offline Classroom Program:

- ✓ 100% Fee Waiver – Student Scoring 90% and Above
- ✓ 80% Fee Waiver – Student Scoring 85% to 89.999%
- ✓ 60% Fee Waiver – Student Scoring 75% to 84.999%
- ✓ 50% Fee Waiver – Student Scoring 70% to 74.999%
- ✓ 40% Fee Waiver – Student Scoring 60% to 69.999%
- ✓ 20% Fee Waiver – Student Scoring 40 % to 59.999%
- ✓ 10% Fee Waiver – Student Scoring 30% to 39.999%
- ✓ 5% Fee Waiver – All the Aspirants Appearing in RGP

RGP RESULT & REWARD CEREMONY

Result Date: 26th March 2025

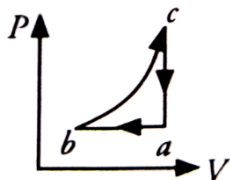
Check Your Result at: www.myrankers.com

Reward Ceremony Date: 27th March 2025

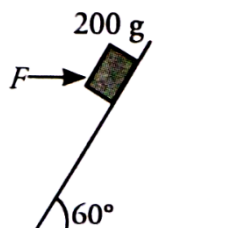
Student's Name: -

Physics (Section – A)

1. The temperature of a body is increased from -73°C to 327°C . Then the ratio of emissive power is
 (A) $1/9$ (B) $1/27$ (C) 27 (D) 81
2. An ideal gas undergoes the cyclic process $abca$ as shown in the given $P - V$ diagram. It rejects 50 J of heat during ab and absorbs 80 J of heat during ca . During bc there is no transfer of heat and 40 J of work is done by the gas. What should be the area of the closed curve $abca$?



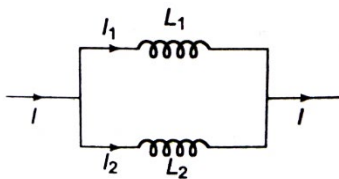
- (A) 30 J (B) 40 J (C) 10 J (D) 90 J
3. Two wires of same length and radius are joined end to end and loaded. The Young's moduli of the materials of the two wires are Y_1 and Y_2 . The combination behaves as a single wire then its Young's modulus is
 (A) $Y = \frac{2Y_1Y_2}{Y_1 + Y_2}$ (B) $Y = \frac{Y_1Y_2}{Y_1 + Y_2}$ (C) $Y = \frac{Y_1Y_2}{2(Y_1 + Y_2)}$ (D) $Y = \frac{2Y_1Y_2}{3(Y_1 + Y_2)}$
4. A block of mass 200 g is kept stationary on a smooth inclined plane by applying a minimum horizontal force $F = \sqrt{x}\text{N}$ as shown in figure. The value of $x =$ _____.



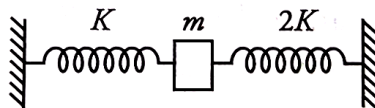
- (A) 9 (B) 10 (C) 12 (D) 15

----- Rough Work -----

5. Two ideal inductors are connected in parallel as shown in fig. A time-varying current flows as shown. The ratio I_1/I_2 at any time t is



- (A) $\frac{L_1}{L_2}$ (B) $\frac{L_2}{L_1}$ (C) $\sqrt{\frac{L_1}{L_2}}$ (D) $\sqrt{\frac{L_2}{L_1}}$
6. The kinetic energy of a revolving satellite (mass m) at a height equal to thrice the radius of the earth (R) is
- (A) $\frac{mgR}{8}$ (B) $\frac{mgR}{16}$ (C) $\frac{mgR}{2}$ (D) $\frac{mgR}{4}$
7. Two springs of force constants K and $2K$ are connected to a mass as shown in the diagram. The frequency of oscillation of the mass is

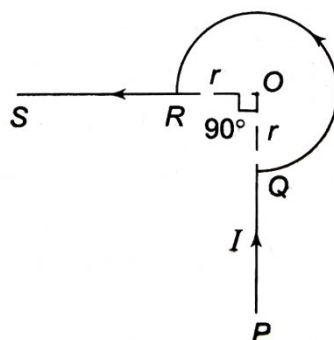


- (A) $\frac{1}{2\pi} \sqrt{\frac{K}{m}}$ (B) $\frac{1}{2\pi} \sqrt{\frac{2K}{m}}$ (C) $\frac{1}{2\pi} \sqrt{\frac{3K}{m}}$ (D) $\frac{1}{2\pi} \sqrt{\frac{m}{K}}$

----- Rough Work -----

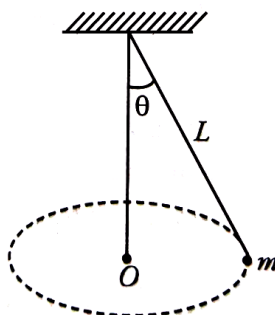
8. The mean free path for a gas, with molecular diameter d and number density n can be expressed as
 (A) $\frac{1}{\sqrt{2}n\pi d}$ (B) $\frac{1}{\sqrt{2}n\pi d^2}$ (C) $\frac{1}{\sqrt{2}n^2\pi d^2}$ (D) $\frac{1}{\sqrt{2}n^2\pi^2 d^2}$
9. What will be the molar specific heat at constant volume of an ideal gas consisting of rigid diatomic molecules?
 (A) $\frac{3}{2}R$ (B) $\frac{5}{2}R$ (C) R (D) $3R$
10. A particle vibrating simple harmonically has an acceleration of 16 cm s^{-2} when it is at a distance of 4 cm from the mean position. Its time period is
 (A) 1 s (B) 2.572 s (C) 3.142 s (D) 6.028 s
11. A proton, when accelerated through a potential difference of V volts, has a wavelength λ associated with it. If an alpha particle is to have the same wavelength λ , it must be accelerated through a potential difference of
 (A) $V/8$ volts (B) $V/4$ volts (C) $4V$ volts (D) $8V$ volts
12. A wire $PQRS$ shown in fig carries a current I . The radius of the circular part of the wire is r . The magnetic field at the centre O of the circular part of the wire is given by

- (A) $\frac{1}{8} \frac{\mu_0 I}{r}$
 (B) $\frac{1}{4} \frac{\mu_0 I}{r}$
 (C) $\frac{3}{8} \frac{\mu_0 I}{r}$
 (D) $\frac{1}{2} \frac{\mu_0 I}{r}$

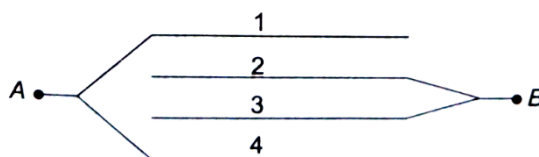


----- Rough Work -----

13. A ball of mass m is thrown from a height h with a speed v . For what initial direction of the ball will its speed on hitting the ground be maximum?
 (A) Horizontally
 (B) Vertically downwards
 (C) At an angle of 45° from the vertical in the downward direction
 (D) Speed does not depend on the direction in which the ball is thrown
14. A small ball of mass m is suspended from the ceiling of a floor by a string of length L . The ball moves along a horizontal circle with constant angular velocity ω , as shown in the figure. The torque about the centre (O) of the horizontal circle is



- (A) $mg L \sin \theta$ (B) $mg L$ (C) 0 (D) $mgL \cos \theta$
15. Four metal plates numbered 1, 2, 3, and 4 are arranged as shown in fig. The area of each plate is A and the separation between the plates is d . the capacitance of the arrangement is



- (A) $\frac{\epsilon_0 A}{d}$ (B) $\frac{2\epsilon_0 A}{d}$ (C) $\frac{3\epsilon_0 A}{d}$ (D) $\frac{4\epsilon_0 A}{d}$

----- Rough Work -----

Chemistry (Section – B)

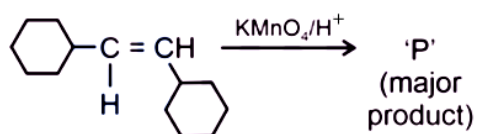
16. What happens to a system at equilibrium when the concentration of one or more reacting substances is changed?
- (A) The system remains at equilibrium.
 (B) The system shifts to a new equilibrium.
 (C) The system is no longer at equilibrium, and a net reaction occurs.
 (D) The system becomes highly unstable.
17. For the redox reaction
 $\text{MnO}_4^- + \text{C}_2\text{O}_4^{2-} + \text{H}^+ \rightarrow \text{Mn}^{2+} + \text{CO}_2 + \text{H}_2\text{O}$
 The correct coefficients of the reactants for the balance equation are MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
- (A) MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
 2 16 5
 (B) MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
 2 5 16
 (C) MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
 16 5 2
 (D) MnO_4^- $\text{C}_2\text{O}_4^{2-}$ H^+
 5 16 2
18. An organic compound contains C = 40%, H = 13.33% and N = 46.67% Its empirical formula is
 (A) $\text{C}_2\text{H}_2\text{N}$ (B) $\text{C}_3\text{H}_7\text{N}$ (C) CH_4N (D) CHN
19. Write IUPAC names of the following structure:
- $$\begin{array}{c} \text{CHO} \\ | \\ \text{CHO} \end{array}$$
- (A) Ethane-1, 1 – dial (B) Ethane-1, 2 – dial
 (C) Ethane-2, 2 – dial (D) Ethanal
20. What is the advantage of using the osmotic pressure method for measuring molar masses?
- (A) It requires high temperatures
 (B) It is insensitive to biomolecules
 (C) It is not dependent on dilution
 (D) It operates at room temperature

----- Rough Work -----

21. A 100watt bulb emits monochromatic light of wavelength 400 nm. Calculate the number of photons emitted per second by the bulb.
 (A) $4.845 \times 10^{20} \text{s}^{-1}$ (B) $2.012 \times 10^{20} \text{s}^{-1}$
 (C) $1.285 \times 10^{20} \text{s}^{-1}$ (D) $3.345 \times 10^{20} \text{s}^{-1}$
22. The rate law for a reaction between the substances A and B is given by $\text{Rate} = k[\text{A}]^n[\text{B}]^m$, on doubling the concentration of A and halving the concentration of B, the ratio of the new rate to the earlier rate of the reaction will be as
 (A) $(m + n)$ (B) $(n - m)$ (C) $2^{(n - m)}$ (D) $\frac{1}{2^{(m + n)}}$
23. What trend in reactivity is observed within a group of non-metals, such as halogens?
 (A) Reactivity increases down the group
 (B) Reactivity remains constant within the group
 (C) Reactivity decreases down the group
 (D) Reactivity is unpredictable within the group
24. Match List-I with List-II:
- | List-I
(Test/reagent) | List-II
(Radical identified) |
|--|---|
| A. Lake Test | I. NO_3^- |
| B. Nessler's Reagent | II. Fe^{3+} |
| C. Potassium sulphocyanide | III. Al^{3+} |
| D. Brown Ring Test | IV. NH_4^+ |
- Choose the correct answer from the options given below:
 (A) A-III, B-IV, C-I, D-II (B) A-IV, B-I, C-III, D-II
 (C) A-III, B-IV, C-II, D-I (D) A-IV, B-III, C-I, D-II

----- Rough Work -----

25. Full name of DDT is
 (A) 1, 1, 1-trichloro-2, 2-bis (p-chlorophenyl) ethane
 (B) 1, 1-dichloro-2, 2-diphenyl trimethylethane
 (C) 1, 1-dichloro-2, 2-diphenyl trichloroethane
 (D) None of these
26. Which among the following reduces Fehling's solution?
 (A) Acetic acid (B) Formic acid (C) Benzoic acid (D) Salicylic acid
27. For the given reaction:



'P' is

- (A) (B)
- (C) (D)

----- Rough Work -----

28. What is the hybridization of the carbon atom attached to halogen in haloarenes?
(A) sp (B) sp^2 (C) sp^3 (D) sp^4
29. What does one mole of reactant R produce?
(A) Two moles of product P
(B) One mole of product P
(C) Three moles of product P
(D) Four moles of product P
30. One mole of acetone requires less heat to vapourise than 1 mole of water. Which of the two liquids has higher enthalpy of vaporisation?
(A) Acetone
(B) Water
(C) Both has the same enthalpy of vaporisation
(D) The enthalpy of vaporization for both acetone and water is zero

----- *Rough Work* -----

Biology (Section – C)

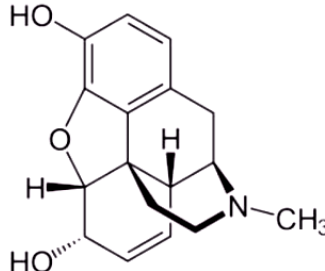
31. Which of the following statements are true for spermatogenesis but do not hold true for Oogenesis?
- (a) It results in the formation of haploid gametes.
 - (b) Differentiation of gamete occurs after the completion of meiosis.
 - (c) Meiosis occurs continuously in a mitotically dividing stem cell population.
 - (d) It is controlled by the Luteinising hormone (LH) and Follicle Stimulating Hormone (FSH) secreted by the anterior pituitary.
 - (e) It is initiated at puberty.

Choose the most appropriate answer from the option given below:

- (A) (b), (c), and (e) only
 - (B) (c) and (e) only
 - (C) (b) and (c) only
 - (D) (b), (d) and (e) only
32. Parathormone deficiency leads to:
- (A) Decrease of Ca^{+2} level in blood
 - (B) Increase of Ca^{+2} level in blood
 - (C) Osteoporosis
 - (D) Hypercalcemia
33. Which one of the following factors will not affect the Hardy-Weinberg equilibrium?
- (A) Genetic drift
 - (B) Gene migration
 - (C) Constant gene pool
 - (D) Genetic recombination
34. Every **A** of deoxygenated blood delivers approximately **B** of CO_2 to the alveoli.
- | A | B |
|------------|----------|
| (A) 100 mL | 4 mL |
| (B) 50 mL | 13 mL |
| (C) 70 mL | 2 mL |
| (D) 80 mL | 0.5 mL |

----- Rough Work -----

35. The animal coelacanth caught in South Africa is an example of vertebrate transition from:
 (A) Fish to Amphibia (B) Amphibia to Reptilia
 (C) Reptilia to Bird (D) Reptilia to Mammal
36. Which of the following sexually transmitted diseases do not specifically affect reproductive organs?
 (A) Genital warts and Hepatitis-B (B) Syphilis and Genital herpes
 (C) AIDS and Hepatitis B (D) Chlamydiosis and AIDS
37. What would be the heart rate of a person if the cardiac output is 5L, blood volume in the ventricles at the end of diastole is 100 mL and at the end of ventricular systole is 50 mL?
 (A) 125 beats per minute (B) 50 beats per minute
 (C) 75 beats per minute (D) 100 beats per minute
38. Which of the following is not a natural/traditional contraceptive method?
 (A) Periodic abstinence
 (B) Lactational amenorrhea
 (C) Vaults
 (D) Coitus interruptus
39. The receptors for the drug shown below are located in:



----- Rough Work -----

40. Primary lymphatic organs serve as the site for:
(A) antibody formation
(B) lymph formation
(C) lymphocytes to encounter and bind to antigens
(D) lymphocyte formation and maturation
41. Following are the stages of cell division:
A. Gap 2 phase B. Cytokinesis C. Synthesis phase
D. Karyokinesis E. Gap 1 phase
Choose the correct sequence of stages from the options given below.
(A) C-E-D-A-B (B) E-B-D-A-C (C) B-D-E-A-C (D) E-C-A-D-B
42. The main difference between “Sixth extinction” and the previous five extinctions is that the sixth extinction:
(A) is mainly occurring on islands
(B) is mainly affecting plants
(C) is occurring at a faster rate
(D) does not involve human activities
43. When tripalmitin is used as a respiratory substrate, the value of RQ is
(A) 0.5 (B) 1.0 (C) 1.7 (D) 0.7
44. Inhibition of succinic dehydrogenase enzyme by malonate is a classical example of
(A) cofactor inhibition (B) feedback inhibition
(C) competitive inhibition (D) enzyme activation

----- *Rough Work* -----

45. Arrange the following in the order of increasing volume.

I. Tidal volume

II. residual volume

III. Expiratory reserve volume

IV. Vital capacity

(A) $I < II < III < IV$

(B) $I < III < II < IV$

(C) $I < IV < III < II$

(D) $I < IV < II < III$

46. Which one of the following shows maximum genetic diversity in India?

(A) Rice

(B) Maize

(C) Mango

(D) Groundnut

47. An example of ex situ conservation is

(A) National Park

(B) Seed Bank

(C) Wildlife Sanctuary

(D) Sacred Grove

48. Viroids differ from viruses in having

(A) DNA molecules without protein coat

(B) RNA molecules with protein coat

(C) RNA molecules without protein coat

(D) DNA molecules with protein coat

49. Consider the following statements:

I. RNA is the genetic material of the QB bacteriophage

II. DNA chemically is less reactive and more stable than RNA

III. viruses having RNA genome and having shorter life span mutate & evolve slowly.

Which of the above statements are true?

(A) I and II only

(B) I and III only

(C) II and III only

(D) I, II and III

----- Rough Work -----

50. Arrange the following events of meiosis in correct sequence

(i) Crossing over

(ii) Synapsis

(iii) Terminalisation of chiasmata

(iv) Disappearance of nucleolus

(A) (i), (ii), (iii), (iv)

(B) (ii), (iii), (iv), (i)

(C) (ii), (i), (iv), (iii)

(D) (ii), (i), (iii), (iv)

51. Match the following genera with their respective phylum.

(1) *Ophiura* (i) Mollusca

(2) *Physalia* (ii) Platyhelminthes

(3) *Pinctada* (iii) Echinodermata

(4) *Planaria* (iv) Coelenterata

Select the correct option.

(A) (1)-(iv), (2)-(i), (3)-(iii), (4)-(ii)

(B) (1)-(iii), (2)-(iv), (3)-(i), (4)-(ii)

(C) (1)-(i), (2)-(iii), (3)-(iv), (4)-(ii)

(D) (1)-(iii), (2)-(iv), (3)-(ii), (4)-(i)

52. NaCl is returned to the interstitium by

(A) ascending limb of *vasa recta*

(B) ascending limb of Henle's loop

(C) collecting tubule

(D) descending limb of Henle's loop

53. At which state of life the oogenesis process is initiated?

(A) Adult

(B) Puberty

(C) Embryonic development stage

(D) Birth

----- Rough Work -----

54. In DNA replication, the Okazaki fragments on the lagging strand are joined together by:
(A) DNA ligase (B) DNA polymerase (C) Primase (D) Helicase
55. Which of the following is not a C₄ plant?
(A) Maize (B) helianthus (C) Sorghum (D) Sugarcane
56. Elution is:
(A) Separating the restricted DNA fragments on agarose gel.
(B) Staining the separate DNA fragments with ethidium bromide
(C) Cutting out of the separated band of DNA from the agarose gel and extracting them from the gel piece.
(D) constructing rDNA by joining the purified DNA fragments to the cloning vector.
57. Which hormone promotes internode/petiole elongation in deep water rice?
(A) Ethylene (B) 2, 4-D (C) GA₃ (D) Kinetin
58. The Earth Summit was held in Rio de Janeiro in:
(A) 1987 (B) 1990 (C) 1992 (D) 2002
59. Connecting link between glycolysis and Krebs' cycle is
(A) PGA (B) aldehyde (C) ketone (D) acetyl CoA
60. A cross between tall plants was made resulting in offspring of tall and dwarf plants with ratio 3 : 1. The genotype(s) of both parents are:
(A) TT and TT (B) Tt and tt (C) Tt and Tt (D) tt and tt

----- Rough Work -----