RPS GROUP OF SCHOOLS
under the aegis of RPS Education Society, M/Garh

BRITISH COUNCIL

SAMPLE PAPER

APPEARING FOR Non-Medical CLASS XI

English: 1-10	Physics: 11-25	Chemistry: 26-40	Biology: 41-55

Mathematics: 56-80	Social Science: 81-90

TIME: 1½ hour **M.M. 90**

Student's Name: ..... Father's Name: ..... Mobile No.: .....

Address .....

Present School: .....

General Instructions:

1. *Duration of Test is 1½ hour and Question Paper contains 90 Questions with maximum 90 marks.*
2. *Use of gadgets is not allowed.*
3. *Student should abide by the instructions issued during the examination by the invigilator or the centre incharge.*
4. *Before attempting the question paper ensure that it contains all the pages and that no question is missing.*
5. ***There is ¼ Negative marking.***

Correct Method ●

Wrong Method ○ ⊘ ⊗ ◐ ◉ ◕

English (10 Marks)

Q1. **Fill in the blank with correct verb :-**

Neither of the boys _____ to take reportcard.

(a) have not come (b) has come (c) are not come (d) were not come

Q2. **Fill in the blank with correct determiner :-**

The council has taken _____ decisions.

(a) his (b) their (c) there (d) its

Q3. **Fill in the blank with correct option :-**

The result _____ by this evening.

(a) will has come (b) will have come (c) had come (d) has come

Q4. My problem is that I get a few time for reading these days. **(Improve the underlined part of the sentence)**

(a) I gets the few time (b) I get fewer time

(c) I get little time (d) The given sentence is correct

Q5. **Select the Indirect speech of the following sentence**

Anshu said, "Did you have her laptop?"

(a) Anshu told that he had her laptop. (b) Anshu said if he had her laptop.

(c) Anshu asked if he has her laptop. (d) Anshu asked if he had had her laptop.

Q6. **Select the Indirect speech of the following sentence**

The students said to their teacher "Good bye."

(a) The students forbade their teacher good bye. (b) The students bade their teacher good bye.

(c) The students told to their teacher good bye. (d) The students bade their teacher to good bye.

Q7. We know that if we throw a stone up it will come back to the earth. **(Which part of the sentence has an error)**

(a) We know that (b) if we throw a stone up

(c) it will come back (d) to the earth

Q8. **Fill in the blank with correct determiners**.

_____ days I am very busy completing my _____ assignment.

(a) These, second (b) These, two (c) Those, first (d) Those, one

Q9. **'To make clean breast of'** means :-

(a) To destroy before it blooms (b) To praise oneself

(c) To gain prominence (d) To confess

Q10. **'To drive home'** means :-

(a) To emphasize (b) To find one's roots

(c) To return to the place of rest (d) Back original position

Physics (15 Marks)

Q11. 10 identical wires each having resistance of 1Ω are joined in parallel, the combination has a resistance of :

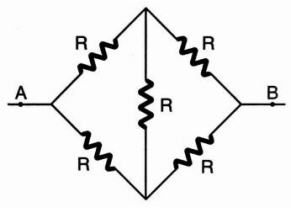
(a) 1Ω (b) 0.1Ω (c) 10Ω (d) 0.01Ω

Q12. A current of 10 amperes is maintained in a conductor of cross-section of $10^{-4}m^2$. If the electron density is 9×10^{28} m^{-3}, what is the drift velocity of free electrons ?

(a) 6.9×10^{-6} m s^{-1} (b) 6.9×10^{-4} m s^{-1}

(c) 6.9×10^{5} m s^{-1} (d) none of these

Q13. The effective resistance between the points A and B is :



(a) R (b) 2R (c) 4R (d) 5R

Q14. An electric charge q moves with a constant velocity υ parallel to the lines of force of a uniform magnetic field B. The force experienced by the charge is:

(a) $q\upsilon B$ (b) $q\upsilon/B$ (c) zero (d) $B\upsilon/q$

Q15. A narrow electron beam passes undeviated through an electric field $E = 3 \times 10^4$ V/m and an overlapping magnetic field $B = 2 \times 10^{-3}$ Wb/m^2. If the electron motion, electric field and magnetic field are mutually perpendicular, speed of the electron is :

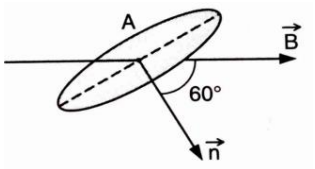
(a) 60 m/s (b) 10.3×10^7 m/s

(c) 1.5×10^7 m/s (d) 0.67×10^{-7} m/s

Q16. The radius of curvature for a convex lens is 40 cm, for each surface. Its refractive index is 1.5. The focal length will be

(a) 40 cm (b) 20 cm (c) 80 cm (d) 30 cm

Q17. A coil of area $A = 0.5$ m^2 is situated in a uniform magnetic field $B = 4.0$ Wb/m^2 and makes an angle of 60^o with respect to the magnetic field as shown in fig. The value of the magnetic flux through the area A would be equal to :



(a) 2 weber (b) 1 weber (c) 3 weber (d) (3/2) weber

Q18. Flux ϕ (in weber) in a closed-circuit of resistance 10 ohm varies with time t (in sec) according to the equation :

$$\phi = 6t^2 - 5t + 1$$

What is the magnitude of the induced current at t = 0.25s ?

(a) 1.2 A (b) 0.8 A (c) 0.6 A (d) 0.2 A

Q19. In a transformer, number of turns in primary and secondary are 500 and 2000 respectively. If current in primary is 48A, then current in the secondary is :

(a) 144 A (b) 24 A (c) 48 A (d) 12 A

Q20. A double convex thin lens made of glass (refractive index $\mu = 1.5$) has both radii of curvature of magnitude 20 cm. Incident light rays parallel to the axis of the lens will converge at a distance L such that

(a) L = 20 cm (b) L = 10 cm (c) L = 40 cm (d) L = 20/3 cm

Q21. A convex lens of focal length 40 cm is in contact with a concave lens of focal length 25 cm. The power of combination is

(a) –1.5 D (b) –6.5 D (c) +6.5 D (d) +6.67 D

Q22. The angle of a prism is 60^o and its refractive index is $\sqrt{2}$. The angle of minimum deviation suffered by a ray of light in passing through it is

(a) About 20^o (b) 30^o (c) 60^o (d) 45^o

Q23. Colour of the sky is blue due to

(a) Scattering of light (b) Total internal reflection

(c) Total emission (d) None of the above

Q24. The far-point of a short-sighted eye is 200 cm. The power of the lens is :

(a) -0.5 D (b) 2 D (c) 1 D (d) -1.5 D

Q25. A ray of light from a denser medium strikes a rarer medium at an angle of incidence i. If the angle of reflection is r and the angle of refraction is r' and the reflected and refracted rays make an angle of 90^o with each other, then the critical angle will be :

(a) $\sin^{-1}(\tan r)$ (b) $\sin^{-1}(\tan r')$ (c) $\tan^{-1}(\tan r)$ (d) $\tan^{-1}(\tan r')$

Chemistry (15 Marks)

Q26. Which of the following represents the correct order of the acidic strength for equimolar aqueous solution of HCl, H_2SO_4, NH_4OH and NaOH

(a) HCl < NH_4OH < NaOH < H_2SO_4 (b) NH_4OH < NaOH < H_2SO_4 < HCl

(c) HCl < H_2SO_4 < NH_4OH < NaOH (d) NaOH < NH_4OH < HCl < H_2SO_4

Q27. The reaction of burning carbon in oxygen is represented by the equation

$C(s) + O_2(g) \longrightarrow CO_2(g) + Heat + Light$

When 9.0 g of solid carbon is burnt in 16.0 g of oxygen gas, 22.0 g of carbon dioxide is produced. The mass of carbon dioxide gas formed on burning of 3.0 g of carbon in 32.0 g of oxygen would be (Note : Atomic mass of C = 12.0 u, O = 16.0 u)

(a) 6.60 g (b) 7.33 g (c) 8.25 g (d) 11.00 g

Q28. $3ClO^-(aq) \longrightarrow ClO_3^- + 2Cl^-$ is an example of

(a) oxidation reaction (b) reduction reaction

(c) disproportionation reaction (d) decomposition reaction

Q29. Compound A on strong heating in a boiling tube gives off reddish brown fumes and a yellow residue. When the aqueous solution of A is treated with a few drops of sodium hydroxide solution, a white precipitate appeared. Identify the cation and anion present in the compound A.

(a) Copper (II) and nitrate (b) Lead (II) and chloride

(c) Zinc and sulphate (d) Lead (II) and nitrate

Q30. Match the items of column – I with the items of column – II

Column – I	**Column - II**
(A) $NH_4OH + CH_3COOH \longrightarrow CH_3COONH_4 + H_2O$	(i) Thermal decomposition
(B) $2AgBr \longrightarrow 2Ag + Br_2$	(ii) Thermit reaction
(C) $ZnCO_3 \longrightarrow ZnO + CO_2$	(iii) Photochemical reaction
(D) $2Al + Fe_2O_3 \longrightarrow 2Fe + Al_2O_3$	(iv) Neutralization reaction

(a) (B)i, (D)ii, (A)iii, (C)iv, (b) (C)i, (A)ii, (D)iii, (B)iv

(c) (B)ii, (D)i, (A)iii, (C)iv (d) (A)iv, (B)iii, (C)i, (D)ii

Q31. In which of the following compounds, nitrogen exhibits highest oxidation state ?

(a) N_2H_4 (b) NH_3 (c) N_3H (d) NH_2OH

Q32. When Bauxite is heated with NaOH solution, the water soluble compound formed is

(a) $NaAlO_2$ (b) Na_3AlO_3 (c) $Al(OH)_3$ (d) Al_2O_3

Q33. **Match column A with column B and select the correct option.**

	Column-I **A[Ore]**		**Column-II** **B[Nature of ore]**
(1)	Copper glance	(i)	Sulphate ore
(2)	Calamine	(ii)	Halide ore
(3)	Rock salt	(iii)	Sulphide ore
(4)	Epsom salt	(iv)	Carbonate ore

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

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

Q34. Which of the following statements is not correct ?

(a) All metal carbonates react with acid to give a salt, water and carbon dioxide

(b) All metal oxides react with water to give salt and acid

(c) Some metals react with acids to give salt and hydrogen

(d) Some non metal oxides react with water to form an acid

Q35. Reaction between X and Y, forms compound Z. X loses electron and Y gains electron. Which of the following properties is not shown by Z ?

(a) Has high melting point (b) Has low melting point

(c) Conducts electricity in molten state (d) Occurs as a solid

Q36. X is a metal which can replace Y and Z both from their salt solution. Y can replace Z but not W. W can replace both Y and Z but not X. What is the correct reactivity order of X, Y, Z and W ?

(a) W > X > Y > Z (b) X > Y > Z > W

(c) X > W > Y > Z (d) X > W > Z > Y

Q37. Correct statement is

(a) NH_4Cl gives alkaline solution in water (b) CH_3COONa gives acidic solution in water

(c) CH_3COOH is a weak acid (d) NH_4OH is a strong base

Q38. Which of the following is/are true when HCl (g) is passed through water?

(I) It does not ionise in the solution as it is a covalent compound.

(II) It ionizses in the solution.

(III) It gives both hydrogen and hydroxyl ion in the solution.

(IV) It forms hydronium ion in the solution due to combination with water.

(a) I only (b) III only (c) II and IV (d) III and IV

Q39. An element with atomic number 17 is placed in the group 17 of the long form periodic table. Element with atomic number 9 is placed above and with atomic number 35 is placed below it. Element with atomic number 16 is placed left and with atomic number 18 is placed right to it. Which of the following statements are correct?

(i) Valency of the element with atomic number 18 is zero

(ii) Elements with same valency will have atomic number 16, 17 and 18

(iii) Valency of elements with atomic number 9, 17 and 35 is one

(iv) Element with atomic number 17 is more electronegative than element with atomic numbers 16 and 35

(a) i, ii and iii (b) i, iii and iv (c) ii, iii and iv(d) i, ii and iv

Q40. Metals like sodium, potassium, calcium and magnesium are extracted by electrolysis of their chlorides in molten state. These metals are not extracted by reducing of their oxides with carbon because

(i) reduction with carbon is very expensive

(ii) carbon readily makes alloy with these metals

(iii) carbon has less affinity for oxygen than these metals

(iv) carbon is weaker reducing agent than these metals

(a) i and ii (b) ii and iii (c) iii and iv (d) iv and i

Biology (15 Marks)

Q41. Electrical impulse travels in a neuron from

(a) dendrite → axon → axonal end → cell body.

(b) cell body → dendrite → axon → axonal end.

(c) dendrite → cell body→ axon → axonal end.

(d) axonal end → axon → cell body→ dendrite.

Q42. Adrenal glands are located above these organs

(a) kidneys (b) lung (c) intestine (d) stomach

Q43. The sugar level in the blood is controlled by

(a) pineal gland (b) thyroid gland (c) pancreas (d) liver

Q44. The changes associated with puberty in males & females is due to the secretion of

(a) estrogen/testosterone (b) testosterone / estrogen

(c) estrogen/growth hormone (d) growth hormone / testosterone

Q45. Select the mis-matched pair

(a) Adrenaline: Pituitary gland (b) Testosterone: Testes

(c) Estrogen: Ovary (d) Thyroxin: Thyroid gland

Q46. Phylogeny refers to

(a) A group of phyla (b) Study of plants

(c) Genetics of animals (d) Evolutionary history/relationship of species from its ancestors

Q47. Heredity is

(a) transmission of genetic characters from parents to offspring or one generation to the next.

(b) transmission of sexual characters from one generation to the next.

(c) transmission of morphological characters from one generation to the next.

(d) transmission of physical characters from one generation to the next.

Q48. Conversion of large fat globules into smaller globule is :-

(a) Emulsification (b) Digestion (c) Assimilation (d) Specification

Q49. Heart beat can be initiated by

(a) sino-atrial node (b) atrio-ventricular node

(c) sodium ion (d) purkinje's fibres

Q50. Movement of food in digestive tract is due to

(a) concentration gradient (b) secretions (c) peristalsis (d) villi

Q51. _____ → Zooplankton → Fish larva → Small fish → Large fish

1st tropic level in an aquatic food chain is represented by

(a) Phytoplankton (b) Tree (c) Hawk (d) Fish eating bird

Q52. The hypothalamus, pineal gland and pitutary gland located in the

(a) brain (b) kidneys (c) lungs (d) heart

Q53. Pancreatic juice contains more than one enzyme. Which among the following combination is correct?

(a) Pepsin and Lipase (b) Amylase and Pepsin

(c) Pepsin and Trypsin (d) Trypsin and Lipase

Q54. In anaerobic respiration in muscles pyruvate is converted into

(a) ethanol (b) CO_2 (c) acetic acid (d) lactic acid

Q55. Vigrous contraction of uterus muscles is stimulated by:-

(a) ADH (b) GH (c) MSH (d) Oxytocin

Mathematics (25 Marks)

Q56. Mean of 8, 12, 16, 22, 10 and 4 is 12, If each observation is increased by 25% then resulting mean is

(a) 9 (b) 15 (c) 12 (d) 16

Q57. Water flows at the rate of 10 m per minute through a cylindrical pipe with internal diameter 2 cm. How long (in minutes) would it take to fill completely a conical vessel whose radius is 50 cm and depth 45 cm ?

(a) 35 (b) 37.5 (c) 40 (d) 42.5

Q58. A box contains four cards numbered as 1, 2, 3 and 4 and another box contains four cards numbered as 1, 4, 9 and 16. One card is drawn at random from each box. What is the probability of getting the product of the two numbers so obtained, more than 16 ?

(a) $\frac{5}{8}$ (b) $\frac{1}{2}$ (c) $\frac{3}{8}$ (d) $\frac{1}{4}$

Q59. The sum of all sides of a cube is 9 cm, the volume of the cube is ……..

(a) $\frac{3}{4}cm^3$ (b) $\frac{81}{108}cm^3$ (c) $\frac{27}{64}cm^3$ (d) $\frac{27}{32}cm^3$

Q60. If $3, -1, -\frac{1}{3}$ are zeros of cubic polynomial p(x), where p(x) is :

(a) $3x^3 + 5x^2 - 11x - 3$ (b) $3x - 5x^2 - 11x + 3$

(c) $3x^3 - 5x^2 - 11x - 3$ (d) $3x^3 + 5x^2 + 11x + 3$

Q61. In village Madhubani 8 women and 12 girls can paint a large mural in 10 hours. 6 women and 8 girls can paint it in 14 hours. The number of hours taken by 7 women and 14 girls to paint the mural is :

(a) 10 (b) 15 (c) 20 (d) 35

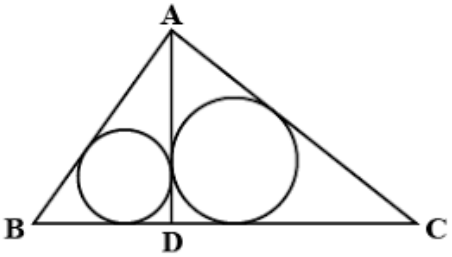
Q62. Minimum value of the expression $x^2 + x - 2$ is :

(a) $\frac{9}{4}$ (b) $-\frac{9}{4}$ (c) $\frac{4}{9}$ (d) $\frac{3}{5}$

Q63. If $\frac{12}{3+\sqrt{5}-2\sqrt{2}} = x + a\sqrt{2} + b\sqrt{5} + c\sqrt{10}$ and x, a, b and c are rational, then find the value of x + a + b + c.

(a) 2 (b) 4 (c) 7 (d) None of these

Q64. In a triangle ABC, AB = 130, AC = 200 and BC = 260. Point D is chosen on BC so that the circles inscribed in triangle ABD and ADC are tangent to AD at the same point. Length of BD is equal to :



(a) 105 (b) 95 (c) 90 (d) 85

Q65. If $1^2 + 2^2 + 3^2$ …… $+ 10^2 = 385$, then the value of $2^2 + 4^2 + 6^2 +$ …… 20^2 will be

(a) 1541 (b) 1540 (c) 1542 (d) 1543

Q66. First term of an arithmetic progression is 2. If the sum of its first five terms is equal to one-fourth of the sum of the next five terms, then the sum of its first 30 terms is

(a) 2670 (b) 2610 (c) -2520 (d)-2550

Q67. If the roots of the equation $px^2 + qx + r = 0$ are in the ratio ℓ : m then :

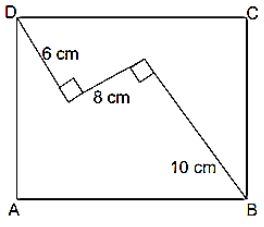
(a) $(\ell + m)^2 pq = \ell\, mr^2$ (b) $(\ell + m)^2 pr = \ell\, mq$

(c) $(\ell + m)^2 pr = \ell\, mq^2$ (d) None of these

Q68. If α and β are the roots of the quadratic equation $x^2 - 6x - 2 = 0$ and if $a_n = \alpha^n - \beta^n$, then the value of $\frac{a_{10} - 2a_8}{2a_9}$ is

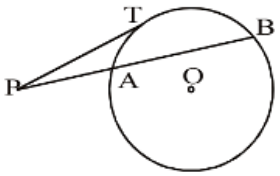
(a) 6.0 (b) 5.2 (c) 5.0 (d) 3.0

Q69. Find the area of the square ABCD.



(a) 160 cm^2 (b) 140 cm^2 (c) 125 cm^2 (d) 120 cm^2

Q70. In the figure, tangent PT = 5 cm, PA = 4 cm, find AB :



(a) $\frac{7}{4}cm$ (b) $\frac{11}{4}cm$ (c) $\frac{9}{4}cm$ (d) can't be determined

Q71. A circle C is drawn inside a square S so that the four sides of S are tangents to C. An equilateral triangle T is drawn inside C with its vertices on C. If the area of S is k times the area of T, then the value of k is

(a) $\frac{16}{3\sqrt{3}}$ (b) $\frac{16}{\sqrt{3}}$ (c) $\frac{32}{3\sqrt{3}}$ (d) $\frac{32}{\sqrt{3}}$

Q72. How many points (x, y) with integral coordinates are there whose distance from (1, 2) is two units ?

(a) One (b) Two (c) Three (d) Four

Q73. If cosec x – sin x = a and secx – cosx = b, then

(a) $(a^2b)^{\frac{2}{3}} + (ab^2)^{\frac{2}{3}} = 1$ (b) $(ab^2)^{\frac{2}{3}} + (a^2b^2)^{\frac{2}{3}} = 1$

(c) $a^2 + b^2 = 1$ (d) $b^2 - a^2 = 1$

Q74. If ABCD is a cyclic quadrilateral, then the value of $\left(\tan\frac{A}{2}\tan\frac{C}{2} + \tan\frac{B}{2}\tan\frac{D}{2}\right)$ is

(a) 1 (b) $\frac{1}{2}$ (c) 3 (d) 2

Q75. If the angle of elevation of a cloud from a point 'h' meter above a lake is 'α' and the angle of depression of its reflection in the lake is 'β' find the distance of the cloud from the point of observation.

(a) $\frac{2h\sec\alpha}{\tan\beta - \tan\alpha}$ (b) $\frac{2h}{\tan\beta - \tan\alpha}$

(c) $\frac{2h\sec\alpha}{\tan\beta + \tan\alpha}$ (d) $\frac{2h}{\tan\beta + \tan\alpha}$

Q76. A vertical pole of height 10 metress stands at one corner of a rectangular field. The angle of elevation of its top from the farthest corner is 30^o, while that from another corner is 60^o. The area (in m^2) of rectangular field is

(a) $\frac{200\sqrt{2}}{3}$ (b) $\frac{400}{\sqrt{3}}$ (c) $\frac{200\sqrt{2}}{\sqrt{3}}$ (d) $\frac{400\sqrt{2}}{\sqrt{3}}$

Q77. A solid metallic cylinder of height 10 cm and diameter 14 cm is melted to make two cones in the proportion of their volumes as 3 : 4 keeping the height 10 cm, what would be the percentage increase in the flat surface area ?

(a) 9 (b) 16 (c) 50 (d) 200

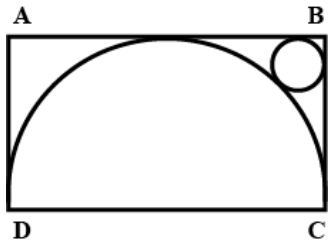
Q78. The mean of three numbers is 11 more than the least of the given numbers and 15 less than the greatest number among them. If the median of the three numbers is 10, then their sum is :

(a) 42 (b) 44 (c) 45 (d) 48

Q79. Three digit numbers are formed using the digits 0, 2 and 5 without repetition. Find the probability that the number is divisible by 5.

(a) $\frac{3}{4}$ (b) $\frac{1}{2}$ (c) $\frac{1}{4}$ (d) 0

Q80. The figure shows a rectangle ABCD with a semi-circle and a circle inscribed inside it as shown. What is the ratio of the area of the circle to that of the semi-circle-



(a) $(\sqrt{2}-1)^2$ (b) $2(\sqrt{2}-1)^2$ (c) $(\sqrt{2}-1)^2/2$ (d) None of these

Social Science (10 Marks)

Q81. Where are the Neyveli lignite mines located?

(a) Goa (b) Tamil Nadu (c) Kerala (d) Andhra Pradesh

Q82. Which one of the following is a private sector industry?

(a) BHEL (b) TISCO (c) OIL (d) SAIL

Q83. Match the following types of industries from Column A with their examples from Column B:

Column A (Types of Industries)	**Column B (Examples)**
(A) Cooperative sector industry	(I) SAIL
(B) Public sector industry	(II) Oil India Ltd.
(C) Joint sector industry	(III) Bajaj Auto Ltd.
(D) Private sector industry	(IV)Sugar mills in Maharashtra

(a) (A)-(I), (B)-(II), (C)-(III), D-(IV) (b) (A)-(IV), (B)-(I), (C)-(II), D-(III)

(c) (A)-(III), (B)-(II), (C)-(I), D-(IV) (d) (A)-(IV), (B)-(III), (C)-(II), D-(I)

Q84. Fill in the blank by choosing the most appropriate option:

…… elects the community government in Belgium.

(a) People belonging to the respective language communities

(b) All the citizens of Belgium

(c) Belgium's leaders

(d) Ministers of the central government of Belgium

Q85. How many languages are included in the Eighth Schedule of the Indian Constitution?

(a) 20 (b) 21 (c) 22 (d) 24

Q86. Who among the following recognises "Political parties" in India?

(a) Election Commission (b) President of India

(c) Speaker of Lok Sabha (d) Supreme Court

Q87. Which one of the following is the most popular form of government in the contemporary world?

(a) Dictatorship (b) Monarchy Rule (c) Military Rule (d) Democracy

Q88. Per capital income is:

(a) Income per State

(b) Income per Earning and Non Earning Members of a family

(c) Income of each female in a house

(d) Income per person

Q89. Which of the following statements is correct about the GDP ?

(a) It shows how big the economy of a country is in terms of purchasing power.

(b) It shows the total product of a country in a given year without calculating the national income.

(c) It shows the number of people involved in production in the tertiary sector in a year.

(d) It shows the value of total goods and services produced in a country in a year.

Q90. Which among the following issues currency notes on behalf of the central government ?

(a) State Bank of India (b) Reserve Bank of India

(c) Commercial Bank of India (d) Union Bank of India